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Latitude and Departure Calculations of Land

By I. F. RAUDABAUGH, C. E.



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Latitude and Departure

Calculations of Land

MADE EASY AND
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—BY—

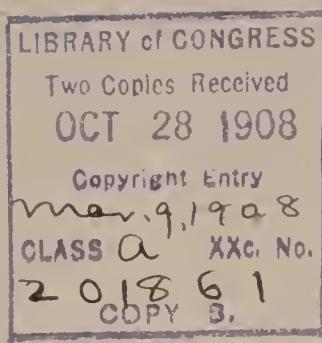
I. F. RAUDABAUGH, C. E.
CELINA, OHIO

“Pap made the crick the line.”

1908

G. W. Phillipps, Printer
St. Henry, O.

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ERRATA

On page 7 lines 2 and 3 should read: Let P = the circumference. π be the 3.1416. Then $A = P \times \frac{1}{2}r$ and also $A = r^2 \times \pi$.

On page 9 lines 40 to 43 should read: Opposite to this you find 41.33 and 33.17. Now as $38\frac{3}{4}$ is less than 45 then 41.33 is the latitude and 33.17 is the departure. Then write the 41.33 under the N in the space opposite the N $38\frac{3}{4}$ degrees E and in the same space with it, and the 33.17 under the E in the same space.

On page 15 line 2 column 3 of table under heading N should read 11.85 instead of 11.25.

Page 20 second column E footing should be 61.80 instead of 61.70.

Page 31 under 1 degree for 39 and 40 the Dep. should be 0.68 and 0.70.

Page 56 under $13\frac{1}{2}$ degrees for 15 the Lat. should be 14.59 instead of 14.69.

Page 76 under $23\frac{1}{2}$ degrees for 34 the Dep. should be 13.56 instead of 13.45.

Page 77 under 24 degrees for 100 the Dep. should be 40.67 instead of 40.65.

Page 78 under $24\frac{1}{4}$ degrees for 75 the Lat. should be 68.38 instead of 63.38; also under $24\frac{1}{2}$ degrees for 22 the Lat. should be 20.02 instead of 20.20.

Page 80 under $25\frac{1}{2}$ degrees for 75 the Dep. should be 31.99 instead of 21.99.

Page 108 under $39\frac{1}{2}$ degrees for 65 the Dep. should be 41.35 instead of 31.35.

8-24-327

22, 1905.

Latitude and Departure Calculations of Land

BY I. F. RAUDABAUGH, C. E.

I claim for this system—

- 1st. Simplicity. That is a system by which any one with a knowledge of arithmetic may calculate a many sided tract of land with ease and perfect confidence.
- 2nd. Certainty. That is when the calculation is completed you can fold up your work and be ready to go into any court and swear that you have the correct area and that in any denomination you may have been figuring, feet, acres, chains or varas, or any other denomination.
- 3rd. You have one less multiplication than the field or tract of land has sides.
- 4th. There are no plus or minus signs used. You consider nothing but what you deal with, viz.: North, South, East and West, represented by their respective initial letters.
- 5th. In the distribution of error no attention is paid as to whether the error is negative or positive, plus or minus. The error is simply divided up as you determine and set in its column opposite the side you decide ought to have it. It forms a step in the proof of itself. That is, the difference between the Northings and Southings, Eastings and Westings must equal respectively the sum of the column of errors under each head.
- 6th. The whole calculation is before you, each step in its order, and each step is proven before you pass to the next. Each step being kept in successive columns, in perfect order and all to be seen at one glance, and every figure pertaining to it kept on the same sheet and the same side of the sheet, thus guarding against the sure thing errors that so often arise from weariness.
- 7th. This system requires no trial or investigation of any kind to determine a furtherest East, West, North or South point of the tract of land to be calculated. You commence your calculations without any reference to any of these points, by simply writing in the proper column and space the first course and distance you come to, and proceed in consecutive order around the tract in either direction you choose. You may begin with any course and distance anywhere in the perimeter of the tract. The result will be the same.
- 8th. You need not fix any meridian, or consider whether your field or tract of land is to the right or left of any line, just simply figure, and figure correctly, after the formula I give herein and you will get the true area. You may use logarithms if you choose. I prefer the simple form of multiplications, as the proofs then stand before you. I have a work on surveying before me (one of the best published) in which logarithmic mul-

tiplications were used and which is by the simple system I use proven to be erroneous. The system I recommend here is the one system recognized as the legal computation of lands, viz.: By Latitude and Departure; and in many of the States required by enactment of the Legislature. I make this so convenient and simple that any one with the proper bearings and distances, can make the calculations, and be sure of the correct result.

- 9th. A little practice will enable any one to calculate a carefully surveyed tract of land of from 3 to 100 sides as rapidly as the figures can be written down. There being a proper place for every figure and also for each of the four letters, N, S, E, and W, by which the places columns and spaces for every figure and result is controlled, you need never hesitate an instant for where the figure or result you have belongs.
 - 10th. When you have concluded, the tale is told, and you can fold up the paper, file it away, and have it all on a single page for any future reference, a thing that is very often convenient.
-

FORMULAS

The following formulas are the basis of areas. Surveying works demonstrate them at length.

Let A be area; a, altitude, and b, base.

1. The area of a rectangle is $A = a \times b$

2. The area of a parallelogram is $A = a \times b$

3. The area of a triangle is $A = \frac{a \times b}{2}$

4. The area of a triangle when 3 sides are given, a, b and c each representing a side and S their sum, then the area is $A = \sqrt{\frac{1}{2} S (s - a) (\frac{1}{2} s - b) (\frac{1}{2} s - c)}$

5. The area of a trapezoid, being a field with two sides parallel let b be one base and b' the other then $A = a \times \frac{b + b'}{2}$

6. To find the area of an irregular polygon draw diagonals and find the area of the triangles and take their sines.

This formula comprises about all there is of Trautwine's system by sines and co-sines, save that the triangles are brought to right angled triangles, and in fact any system when we remember that the sines and co-sines are the basis for the Traverse Table.

7. The area of a regular polygon. Let P be the perimeter and r be the radius then $A = P \times \frac{1}{2} r$.

The area of a circle.

Let P = the circumference. π be the 3.1416. Then
 $A = P \times \frac{1}{2} r$ and also $A = r^2 \times \pi$.

The formula pertaining to the properties of the triangle are in the right angled triangle.

Let a be one side and b one side and h the hypotenuse. Then $A = \frac{a \times b}{2}$
Also $a^2 + b^2 = h^2$ and $h^2 - a^2 = b^2$ and $h^2 - b^2 = a^2$.

The sum of the angles of a triangle are equal to two right angles or 180° .

In the above triangle X represents the angle at "X" and Z represents the angle at "Z" and Y represents the angle at "Y" and a, b and c represents the length of the respective sides. The sines of the angles opposite the sides of the plain triangle are proportional. With one side and any other two parts given the other part may be found therefrom. Therefore we have the formula:

$$a : b :: \text{Sine } X : \text{Sine } Z$$

$$a : c :: \text{Sine } X : \text{Sine } Y$$

$$b : c :: \text{Sine } Z : \text{Sine } Y$$

In obtaining the latitude and departure of any course if it is desired to work to the minute, and bearings are so taken. This may be done by using these two formulas, viz:

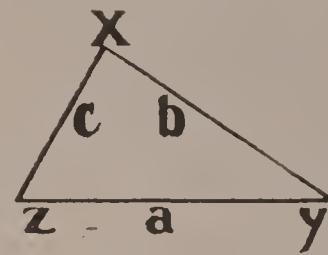
$$\text{Lat} = \text{Distance} \times \text{Cosine of bearing.}$$

$$\text{Dep} = \text{Distance} \times \text{Sine of bearing.}$$

EXPLANATION.

Having read the above with care I assume the matter can be easily understood as given below. However, I assume that you have been through your mathematical education; rather I should, perhaps, say, no attempt is here made to demonstrate the reasons for the result or démonstrate the figures of fields. This is done in many ways by the different authors on surveying. Suffice it to say, that you divide the difference of the total areas by two at the end of the calculation for the same reason that you would divide the product of the base by the altitude of right angled triangle by two to obtain the area of the triangle.

A tract of land has this feature in common with a circle; you may start at any point in the boundary, and following the courses and distances forward or reversed to the right or left, come around to the point started from; provided you have done the almost impossible thing of having taken every course and distance exactly. By as much as you miss coming to the same point, is the error. Be wary on this. The too exact man, or he who is trying to read to the minute and measure to the $\frac{1}{4}$ inch very often gets off further than anybody. Yet surveying is not a crude science, and the courses and distances should be taken with extreme care. Every course and distance should be acquired in the



same manner. If today you measure half way around the tract of land with a set of measures that are somewhat careless and tomorrow you get two very accurate and precise measures to complete the work your survey will not close well and your area will be erroneous. It would more than likely be more erroneous than if you had continued with the first two, because there would then have been some equalization in the errors. If you are using a needle watch for local attraction, wire fences, trees, railroad tracks, haystacks, houses and especially oil wells. But having entered the bearings and distances that bound the field—

FIRST—Count the number of sides.

SECOND—Rule your sheet of paper, first horizontally, spacing to fit the sized figure you wish to use, and, making as many spaces as there are sides or corners to the field or tract of land.

THIRD—Begin at the left and rule perpendicular columns across these horizontal rulings, first, one for bearings, and head it at top "B," second, one for distances and head it at top "D," third, four columns of equal width for North, South, East and West and head 1st one "N," 2d one "S," 3d one "E" and 4th one "W."

FOURTH—Two narrow columns for error. Extend a horizontal line across these two columns near the top and write error above it and in the first column just below this write the letter "L" and in the other write the letter "D" being for correction of error in latitude and departure or Northings and Southings and Eastings and Westings. There should be error. If a surveyor should present to me a survey for calculation and I found that the Northings, Southings, Eastings and Westings exactly balanced I would consider that this of itself showed something wrong and possibly fraudulent, in that course or distance had been doctored, and that the ones given were not the true ones. Bear in mind that no two measurers will get the exact same results with two other measurers, if put on a series of rough or long courses, when their measurements are made independently of each other. The same may be said of instrument men. The many sources of error make these two columns a very necessary part of the table or formula. Again rule four columns to the right of the two error columns of equal width as before and head them "N," "S," "E" and "W." Then rule two columns of equal width and a trifle wider space to the right and head the first one E, D, D and the second one W, D, D. Then rule a narrow column to the right and head it n, m, for name of multiplier. Then rule a column to the right of a width equal or a little wider than one of the double departure columns, and head it mult. for multipliers. Then rule two columns to the right of still a little wider space and head the first one N A for North areas and the other S A for South areas. This completes the formula. The ordinary sheet of foolscap paper will contain the calculations for a tract of land having 15 or less sides if you make reasonable sized figures. I have put a 20 sided calculation on one of these sheets, and blanks may be furnished so that all that would be needed would be to write in the results as they are obtained. If there are more sides, or if more perpendicular room is needed so as to keep the calculation together a larger sheet should be used. I have often done this by pasting one sheet to the bottom of the other. Having prepared your paper

you are ready to write the bearings and distances, putting each in the order in which it occurs, first writing the first bearing in the column of bearings at the top, and the distance belonging to this bearing to the right opposite this bearing in the column of distances. Then write the next bearing and distance, so continue till the bearings and distances are all written and you have filled all the spaces for these which will be in the last space at the bottom of your horizontal rulings if you have counted the sides of the tract of land correctly and have every course and distance. I do not rule a column for numbering the sides from top to bottom as, if I have counted rightly they are all in and I save making figures and lines. Yet, it is not objectionable to do so. The bearings and distances being all down and each being in its proper place, i. e., each distance in the space that corresponds to its bearing. Take the first bearing and distance, turn to the Traverse Table and take the latitude of the bearing and distance and place this opposite that bearing and distance in the same space and under either the "N" or "S" according as the bearing is either North or South, take the departure and place it opposite the same bearing and distance according as the course is East or West, under the "E" or the "W." Treat the next bearing and distance in the same manner, and so on consecutively till the last or bottom one is so treated being careful not to get the Latitude in the Departure column and visa versa. By observing, always, that if the bearing is above 45 degrees the greater number is departure and the lesser latitude, and if the bearing is less than 45 degrees, the greater number is latitude and the lesser number departure, you can scarcely go wrong. If you should, the balancing will detect it if large. A good plan is to run the eye over the columns AFTER these latitudes and departures are entered in their places and see if there has been any transposition, bearing in mind that 45 they are equal, greater than 45 the greater is departure and less than 45 the greater number is latitude and the less departure. These latitudes and departures are readily taken from the table. This should be done with as little figuring as possible. For this reason I have appended the Traverse Table through the quadrant for each $\frac{1}{4}$ degree up to and including 100. Each $\frac{1}{4}$ degree is confined to a table by itself and running from 1 to 100 inclusive. A large part of the work is simply taken from this table and written into the formula on your sheet of paper. Take the first bearing. Look for the degrees corresponding to it in the table, when found pass down the column of numbers till the number corresponding to the distance is found. Opposite, and under the degree or fraction thereof given is found the latitude and departure which transmit to the columns under the proper head as above. Suppose your first bearing is N $38\frac{3}{4}$ degrees E 53. Turn to the Traverse Table and look for $38\frac{3}{4}$ when found pass down the numbers till you find 53. Opposite to this you find 41.19 and 33.35. Now as $38\frac{3}{4}$ is less than 45 then 41.19 is the latitude and 33.35 is the departure. Then write the 41.19 under the N in the space opposite the N $38\frac{3}{4}$ degrees E and in the same space with it, and the 33.35 under the E in the same space. Do this to every course around the survey. Distance should be kept in integers and decimals thereof. In obtaining the latitude and departure, these decimal parts should be taken from the table with care as to combining them with the latitude and departure of the integral distance. It makes extra work if you put the decimal part under the integral part and do not notice it till you come to balance when you are compelled to go back and hunt over the work to see

where the trouble comes from. Every course has the two elements latitude and departure save the North, South, East and West. If you are required to figure to get the latitude and departure by reason of the table not covering the number of places in the distance, put down your figures in sets on your paper so you can see them at a glance. If then some hypnotic spell, or if tired enough that the sand man is putting sand in your eyes and you put the decimal in the wrong place or miss add, when you waken you can see at a glance the wrong, and right it. Each course having been so treated, and the latitude and departure of each and every bearing and distance entered in its proper column and space and place; add the Northings and Southings under the "N" and the "S." If the survey has been correctly made and the figures faithfully recorded their sums should be reasonably equal.

To prove that you have added correctly cast out the 9's from each column and result. If your work is correct the excess of 9's in the column of Northings must equal the excess of 9's in the footing. This is an easy matter, but it is so seldomly practiced that I will give a short explanation of my manner of doing it. I add the Northings first and write the sum beneath the column. Suppose this sum was 78.64 chains. At a glance I see that 6 and 4 are 10, throw out the 9 and 1 and the 8 are 9 so that I have 7 as the excess. I place this 7 as an index either to the right or left of the footing. Then I cast out the 9's from the column out of which this footing came. If I have added correctly the excess of 9's in the column must equal the 7. They must be the same. A little practice will enable you to run these 9's out of these columns in a moment. You can do it sooner than you can add one line of figures of the column, and the result makes you a far better proof than adding the column over again, because you break the similarity of combination. Now in casting out the 9's you are not confined to run them in any certain way. You can take the figures in your column either up or down, cross, zigzag or any way so you get all the figures and hence their excess of 9's. For instance in the number above, you can say 8 and 6 are 14 excess 5 and 4 is 9 leaving 7 the excess, or you may say 7 and 8 are 15 excess 6 and 6 and 6 are 12 excess 3 and 4 is 7 the excess.

This is so, no matter how many lines of figures or columns you may have. I prove every addition and every multiplication I make in these land calculations by this plan. This is one feature only, however, of the proofs. Foot the Southings in the same way. In writing the excess of 9's I always place the excess of the footing in such a way that I can put the sign of equality between the excess obtained in the footing and the excess obtained from the column footed. If these figures are made small and have the sign of equality between them they can never be mistaken for any part of the calculation. Treat each of the four columns under "N," "S," "E" and "W" in this way. When you have done this you are sure that you are right that far. This insures you that when you take the differences, i. e., the error, that you have the true error. Proceed then to distribute the error, or the difference, between the Northings, Southings, Eastings and Westings. Whatever this may be, 10 feet, 10 links, or any number, divide it up among the courses in the proportion you judge equitable, whether by mathematical proportion or judicial observation.

The first column for error is marked at the top under error "L" for error of latitude. Put opposite each course as you pass down this column the part of

the error that course is to share. When you arrive at the bottom of the column you have or should have all the error exhausted of the "N" and "S" and the sum of this column should equal the difference between the Northings and Southings. In the same way take the difference between the Eastings and Westings, and dividing this up as in the Northings and Southings place the part thereof that you have determined each course shall have opposite that course as was done in the "N" "S" case under the letter "D" under error, and see that the sum of this column equals the difference between the Eastings and Westings.

If the "N" column was greater than the "S" column then you must take error from the "N" column and add error to the "S" column. Pass down the error column under the "L" and as you come to the error see whether the number to the left and under the "N" or "S" is under the "N" or the "S;" if under the "N" then you must subtract the error from it and carry the remainder to the right and place it in the same space and under the "N" again as the corrected latitude; but if you find the number to the left and in that space under the "S" then you add the error and carry the sum to the right and place it under the "S" again in the same space as the corrected latitude. Treat every course the same way. Now add the columns of figures under the "N," "S," "E" and "W." Cast out the 9's to see if you have added correctly. The footing under the "N" must equal the footing under the "S." If this is not so you have made some mistake in adding or subtracting the error, this must be rectified before proceeding further. Treat the columns under the "E" and "W" in the same way. The columns are now balanced. The work is proven to this point. The next step consists of obtaining the so-called double departure, for the two columns headed E, D, D, and W, D, D. To do this take the number in the top space, under either "E" or "W" as it may occur as you find it, and also take the number in the bottom space in same way and combine them, thus, if both numbers are under the "E" add them, and place the sum in the "E, D, D" column and in the top space opposite the first "E." If one is under the "E" and the other under the "W," subtract the less from the greater and place the difference in the "E, D, D," or the "W, D, D" column according to which is the greater number the "E" or the "W" and in the space at the top as before directed. Next take the top number under either the "E" or the "W" and the number in the next space below and combine them in the same way, putting the result in the second space. Observe that every number under the "E" and "W" is used twice and the result placed opposite the number as it is used the first time, and in the same space with it. If for instance your number be 14.23 under the "E" at the top space and the number be 25.73 at the bottom space and under the "W" then 11.50 would be placed under the "W, D, D" at the top and opposite the 14.23 and in the same space. Then combine the top number again 14.23 with the next number below in the same way, observing that if this number and the next below are both under one letter add them and carry the amount across to the right to the "D, D" column under that initial letter from which it is taken. When they are under different letters the greater number always shows which "D, D" column the difference goes into. Then combine the second number with the third number in the same way till you arrive at the bottom of your columns. Then add your "E, D, D" and "W, D, D." If they balance, i. e., the sum

of the "E, D, D" equals the sum of your "W, D, D" your work is correct. If they do not balance, you must discover your error and make them balance before proceeding. When this is done your calculation is proven to this point. The next step is obtaining the multipliers. To do this, first write 0's in the upper space opposite the upper number, signifying that you have nothing to do with the first factor.

This cuts off one multiplication entirely. Second, write the second number you find under either the "E, D, D" or the "W, D, D" across to the right and in the next space below the 0's and to the right of the column, headed n m, and in the column headed n m, and in the same space write the letter under which the number was found. If found in the "E, D, D" column put E in its space and in the n m column as directed. This gives the name to the first multiplier. If the number had been found under the "W, D, D" then W should be written therein naming it a w or west multiplier.

My real practice has been to write the letter naming the multiplier with the multiplier just to its right, thus avoiding the ruling of the one column. For instance, if the first multiplier is found under the "E, D, D" and to be say 14.23, I would carry this across to the right to the column of multipliers in that space and mark it 14.23E. With this first multiplier combine the third number found under either "E, D, D" or "W, D, D" with it. If your multiplier is E and your next or third number is found under "E, D, D" add it and write the result for your second multiplier in the next space below, but if the number is under "W, D, D," and is smaller than your first multiplier subtract it from your first multiplier and write the result—difference—in the next space below and mark it E for your second multiplier; but if the number found under the "W, D, D" is larger than your multiplier, subtract your multiplier from it and write the result for your second multiplier and mark it W.

Observe that if the letters are alike you add but if they are different you subtract the lesser from the greater for the next multiplier and mark with the sum of the greater number letter. For the third multiplier take the next number you find under "E, D, D" or "W, D, D" and combine it in same way with the second multiplier and write the result in the next space below, and mark it in same way as before; proceeding in this way till the bottom or last space is reached. Now if the work is correct, your last multiplier is the same number as the top number under either "E, D, D," or "W, D, D," and opposite your 00's multiplier and in the same space. Always be sure to get all numbers in their proper spaces and columns. If your last multiplier is not the same as the upper number, then an error has been made and should be corrected before proceeding any further. This is the proof that this step is correct, and that so far no error can be found in the work. Below your rulings and below the work up to this point there should be blank space on which to perform the multiplications that are now required to be made. Each one of these should be left standing in plain view and not put on separate scraps of paper. You have all the factors. Handle them with gloves. Take the first multiplier and in its space to the left you will find the other factor under either the N or the S. Multiply them using either one for the multiplier, whichever is the most convenient.

Mark each factor with the letter belonging to it. If the multiplier is E

keep the E mark with it and if the number found to the left is found under N mark it N. Observe that when the multiplier is an E multiplier that the product will be marked with the same letter as the other factor, but if the multiplier is a W multiplier then the product will be marked with the opposite letter from that of the other factor. N products go into the column of North areas headed Na, and S products go into the column of South areas and headed Sa. If your first multiplier is E and the number to the left should be under N then your product would be N and go into the Na column in the same space with the first multiplier, but if the first multiplier is W and the number found to the left should be under N, then your product would be S and go into the column headed Sa and in the same space with it. In placing these factors for multiplication put them in as concise order as possible. This may be done by putting the first set to the left and as near up to the work that has been done as possible, leaving just room for the multiplication. Put the next set to the right and about on a level therewith giving just room again to make the multiplication. Prove each multiplication by casting out the 9's.

This is done in a moment. Run over the upper factor and write its excess of 9's in a small figure, like an index figure, just a little to the right of it. Go over the lower factor in the same way. Multiply these two indices, or excesses, together and drop out the 9's and write the excess in a small figure to right of the product. Cast the 9's out of the product and put the excess of 9's near the other excess and put the sign of equality between them. If they are equal the work is correct. If they are not, correct the work. You may think this would take time but a little practice will enable any one to do it at a glance. If the excess in either factor should be 0 stop at once and go to the product and see if the excess is 0 there. It must be if the work is correct. In casting out the 9's you pay no attention to the decimal point. Ignore it. The product being correct write it into the proper column N areas if the result is N, and S areas if the result is S as above and opposite the factors and in the same space that produced it. In doing this be sure to get the decimal point at the proper place. You can scarcely err in this if you keep correct count to 4 places as you will observe that the decimal places are limited to two in each factor. Proceed in the same way with the second multiplier, writing it, however, to the right of the first multiplication as suggested, giving just room to run the figures, and have them on a level from left to right as near as possible; proving and writing the results opposite each multiplier till they are all exhausted.

When this is done run the eye over the integers of the factors in each space and compare the product in the area column. A glance will show you whether you have inadvertently moved the decimal point a space in any product as the error would be so great as to be at once apparent. Also see that you have the results in the proper column. That is that for every multiplier with E the result is under the area column of the same initial letter, N or S, and if the multiplier is marked with a W then the result must be in the contrary column W, the woman and always contrary. This step being thus proven and tested; add the area columns. Cast out the 9's to prove the footings are correct. In doing this to these columns do not take one line of figures at a time as you do in adding but take the whole set of figures found in the Na or Sa at a time, in either direction just so you chase out the 9's. Take the difference between the

footing of the Na column and the Sa column and divide this by two. The result is the area. If you have been working in chains and links being chains and hundredths, pass the decimal point one place to the left. This then shows the number of acres.

Having gone through the above we take the following examples. The surveyor may need only to take the matter up from this point.

CALCULATIONS OF LAND

In obtaining the latitude and departure for S $16^{\circ} 5'$ E observe that for $16^{\circ} 5'$ the lat. is 13.45 , and for 16° it is 13.46 , and for $16\frac{1}{4}^{\circ}$ 13.44 and departure for 16° is 3.86 , and for 16° it is 13.44 either observation or applying the rule that lat. = Distance \times cosine of bearing, and Dep. = Distance \times sine of bearing we get the lat. and dep. in both S $16^{\circ} 5'$ E and N $8^{\circ} 55'$ E as used.

LATITUDE AND DEPARTURE

B	D	N	S	E	W	Er.		W	E	D	WD	M	N	Na	
						L	D								
N 8° 55' E	12	11.85		1.86		.01	.02	11.86		1.88	.578	0.00			
N 74 3/4 W	6	1.58			5.79		.01	1.58		5.78	3.90	W	3.90		6.16
S 16° 5' E	14		13.45	3.88		.01	.02		13.44	3.90	1.88	W	5.78	77.68	
			13.43	13.45	5.74	5.79	.02	.05	13.44	5.78	5.78	5.78			77.68
			13.43	13.45	5.74	5.79									6.16
															2) 71.52
															3.58a —

$$\begin{array}{r}
 13.44 S^3 \\
 -5.78 W^2 \\
 \hline
 10752 \\
 9408 \\
 6720 \\
 \hline
 77.6832 N^{6=6}
 \end{array}$$

CALCULATION OF LAND

17

The same result will be shown by reversing the bearings, as follows:

The formula for getting the area of a triangle ; sides being given is $A = \frac{1}{2} s(s-a)(s-b)(s-c)$

The instrument was set and the bearings and measurements made in a field for the purposes set out. By this shortest of latitude and departure calculations it may be seen that while the sides are 3 the multiplications are 2, that beginning with any course and going around the tract in either direction, the result is the same.

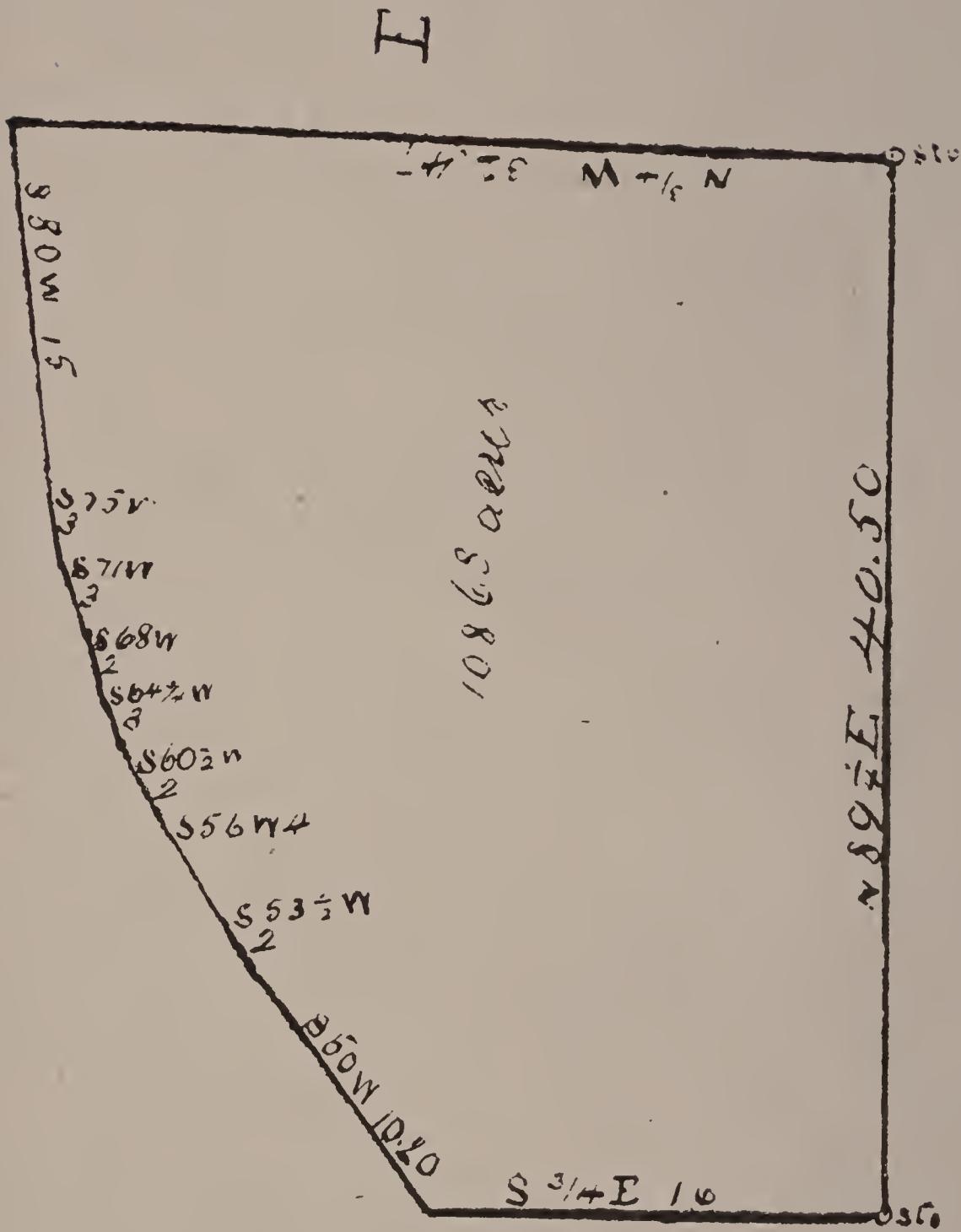
This is so for any tract of land regardless of the number of sides and regardless of any meridian or base line. Do not measure land by the offset, or ordinates rules. Gumere and Davies devote quite a bit of their books to this system of obtaining areas. I cut this all out as rubbish and get right down along the "erick that pap made the line" and put in the bearings and distances; then no one can dispute the figures. If you are going to make part of the survey in this way, it may as well be all made on the same principle. Another thing never do, cross out the latitude or departure figure like I have done above in the 11.85 and written the corrected number, or the number after the error has been applied above. All such things tend to confuse the work. You mostly work with a pencil and rubbing or scuffling may so obscure the figure you want as to give you bother, to say nothing of two sets of figures looking at you from the same space and only one set to be used. I have a late work on surveying that recommends this. Never figure in sq. rods and sq. rods, but in chains and hundredths of a chain. Very often the value of the land at a given price is required. It can then be got by one interpolation. Still another thing never do, namely, supply a course. Let every bearing and distance be taken on the ground. Much space is occupied by the two best works before me—Gumere & Davies—on supplying one or two courses, bearing and distance. It is all right in theory, but I will further along more fully show why it should never be resorted to in practice if it is possible to avoid doing so. A practice of 35 years in different States has not produced such a course in my work, either upon the mountains or in the lakes and rivers.

This example is used for the reason that it was used in the edition of Gumere of 1840 and copied into Davies edition of 1898 with only the changes that the bearings in Davies are given in degrees and minutes and in Gumere in degrees and $\frac{1}{4}$'s, $\frac{1}{2}$'s and $\frac{3}{4}$ degrees, and Davies work is in rods and Gumere's in the better form of chains and in Davies N $36^{\circ} 45'$ E 76.8 rods is in Gumere N $36\frac{3}{4}$ E 19.36 chs. And the last course S 18 W 10.62 in Gumere is S $16^{\circ} 45'$ W 40.5 rds.

With these differences the area only differs by 15-100 of an acre. Davies guards the result he gives by saying it may be varied by the way in which the balanceing is done. He means rather to what course the error is added or subtracted. His result amounts to 110.64a. The error is .01 on the N and S and .30 on the E and W. Rather one-sided but applying this error by adding .16 and deducting .14 the result is 110.63 so that if anything the result should be less than 110.63. Looking at the work as I first learned it in Davies, and the way as I then thought, the only way of doing it, and comparing the numerous ways I have investigated lead me to undertake this work. The many sources of error, and the many erroneous results I have found in the actual application of the various systems leads me to recommend the one used here.

I think you will have no trouble in finding where every figure comes from and where it belongs. My system detects two errors in this example as it appears in the book. First, the factor 15.59 is used would give an area of 110.90a, being .12 too great. Second, the 3.22 under the W, D, D, is not in its proper space in the book. You catch the idea that every figure and result has a place. A placing it different may cause trouble. You observe that in getting the latitude and departure in fractional courses, such as 13.70, the integral part 13 is first taken and the .70 then added. This plan often prevents inadvertant moving of the decimal point. You see further that the indices showing the excess of 9's are placed with each result. Every step is doubly proven, while when you have balanced the N and S and the E and W columns you need give that no further thought, same with the E, D, D, and W, D, D, columns, and in the multipliers the bottom mult. must be same as the top in number, but not in name; as in this problem 9.99 W is bottom multiplier while the top 9.99 is under the E, D, D. The first multiplier is 16.88 E. In its space to the left we find 9.66 under the N. I see at once that 16.88 has four figures and 9.66 has three, therefore use 16.88 E as the multiplicand and 9.66 as the multiplier. Keep the letters along. Write them down and carry out the work. Prove the work as shown and mark the result N and carry it into the space with these factors and under Na.

In proving this multiplication I say $8 + 1$ is 9, drop it, and $6 + 8$ is 14, excess 5 in the multiplicand. $6 + 6$ is 12, excess 3 in the multiplier, then 3×5 is 15 and excess is 6. In the product I see that $8 + 1$ is 9, and $6 + 3$ is 9, leaving the 6 as the excess. This being equal I say this step is correct. This is done so quickly that it saves the time usually consumed in looking back to see if any mistakes have been made. You need never look back by following this plan. However, look along the space and compare integers to see that you have faithfully transcribed figures and results.



W

The foregoing is a diagram of a survey just made and will serve to illustrate some of the important things referred to. By adding the 32.47 and the 16 and getting the average line of 24.24 and then obtaining the area by multiplying the base 40.50 by the average line of 24.24 we have the area of 98.16 acres. Table the bearings and distances and calculate the area by latitude and departure and you get 108.68 acres. A difference of over 10 acres. Now if you imagine the tract with the lines and bearings all the same, but the three lines on the South of the R. R. to be on the North and reversed and again apply the average line you would get an area of 10 acres too much. This applies to every form of offset, ordinates, or stripping of land.

It is true if you make enough such offsets, ordinates, or strips, you will come so much nearer the true area, but while you are doing this you can survey around the tract several times. Besides this, I find that in most cases in the states where the government has laid out the land into sections that these irregular tracts are mostly along streams where "Pap made the crick the line," and usually the banks are covered with a thick growth of brush, briars and vines, while just below the bank, along the margin of the water is a strip that is fairly free of these obstructions, and where the more accurate line may be got at, remembering, however, that a very high bank may pull the magnetic bearings somewhat. In the survey above the angles were taken with the magnetic needle and the instrument was set up on the North and near a wire fence of about the hight of the instrument. The bearings given in the first table are the ones shown by the needle. The table shows error in the "E and W" of 73 links. This error was distributed as shown and the calculation made. Along these courses the ground was also very rough, so that the measurements were not accurately made. Now it may be seen that the wire fence was having an influence on the needle to the extent, at least, of $\frac{1}{2}$ degree. If we add $\frac{1}{2}$ degree to these bearings saving the first course of S 80 W, which was taken free from the wire influence, and again distribute the error as shown in the second tabulation you see that the area varies but about 5-100 of an acre. You will be surprised to observe how little variation there will be in the final result of areas whether the error is great or small, providing always that it is in any reasonable bounds and the distribution is near fair. Here I want to call your attention to another thing. Suppose the chain men, through ignorance or fraud, in measuring the course 32.47 should have give the distance of 34.47 by counting the odd marker at the two middle outs. Then you proceed to the end of the course of S 50 W, and then without measuring the course 16 you calculate it. You will of course see that you cannot fail to force the survey to close tight up. You have it so closed and make a calculation that looks fine on paper and yet it is wrong, and you have a result that would be over more than 9 acres above what is actually in the tract. You may think that this would seldom occur, but I want to say that I have caught dozens of chain carriers in this very thing.

The theory is all right as a mathematical proposition of supplying unmeasured courses but in practice it is next to valueless. I am speaking of the promiscuous work of farm surveying where you have so many kinds of chain carriers. You can never find any two who will agree with any other two on a series of measurements.

CALCULATION OF LAND

When the excess of 9's is 0 in either the multiplicand or multiplier, drop it at once to the product, as the excess must be 0 in the product.

$$\frac{2172.69}{2} = 108.63 \text{ acres}$$

$$\frac{16560}{23184} \cdot \frac{19440}{34992} \cdot \frac{1308}{3052} \cdot \frac{1928}{482} \cdot \frac{964}{482} \cdot \frac{47+21}{47+21} \cdot \frac{26345}{26345} = 24840N^6 = 0$$

57.81W	62.8W ⁷	72.36W	80.17W	89.768N ⁸
2.28	1.18S	6.48S	1.5.98S	.55N

NOTE—This calculation is the same as the preceding one, but with a distribution of error by adding one-half degree to the courses along the wire fence and then distributing .11 and .61 the remaining difference, which brings the area, 108.63 acres.

$$\frac{74.104N^{\tau} - 48.8928N^0 = 0}{181.1106N^{\tau} - 181.8265N^0 = 0}$$

You observe that the foregoing work is all in chains. I prefer this for the reason that this is the most universal denomination worked in and also because of its decimal character. The result would be the same if in rods, feet, varas, or anything else. If the figures in the foregoing calculations had been in rods you would divide by 160 after taking half the difference of the "N" and "S" areas. If it were in feet, to get the area in acres you would divide by 43560. So in those states where they distinguish between "strict" measure and "allowance" the division must be made by the number that has been established by the usages of that locality.

Care should also be taken where courses "due" N and S, or "due" E and W cause vacant spaces to occur in the proven and corrected columns of "E and W," to see that the combination with the "0" quantity is made as though it were an integral quantity in getting the "E and W" double departure.

Care must be exercised in casting out the nines too, as it is possible to be mistaken even in this.

$$\begin{array}{r}
 72.36W \\
 6.498 \\
 \hline
 65124 \\
 28944 \\
 43416 \\
 \hline
 460.6164N
 \end{array}$$

looks all right in proof while in fact it is wrong. It would prove if the 460 were 469. You can see which is correct.

I not only cast out the nines at every step, but I examine every step when taken so that I feel safe at the end.

The following notes will illustrate the statement that the fact that a survey does not close fairly well is an evidence of bad title. These notes accompanying a plat and survey solemnly recorded in our county records in this county purport to be correct. The area of the tract is given as 706.71 acres. It is short of that area nearly 100 acres. Table or plat the notes and you do not get them to close by over half a quarter of a mile. The survey of the North West part of this tract, which was sold as a farm of 190 acres shows one hundred and fifty acres, a loss of forty acres. It is now in court. There are many such instances. The following are the recorded notes:

"Notes and Survey of Crescent Section." Beginning at the S W corner, thence North 105.87, thence S 73 E 7.50 S 38 E 2.75 S 22 W 5.00 S 24 E 6.75 S 53 E 9.00 S 78 E 5.50 N 74 E 8.00 N 80 E 1.00 N 79 E 10.50 E 11.00 S 47 E 10.00 S 2.90 S 78 E 6.90 N 49 E 8.00 S 62 E 4.50 N 80 E 4.00 S 81 E 6.00 S 7.50 S 29 W 7.00 S 23 E 1.75, thence S 53.88, thence W 80.59 to the beginning containing 706.71 acres.

Careful to get the hundredths of an acre and miss the hundreds of acres. Another portion of the same tract was found to be short in about the same proportion, while a third part was found to hold out in area. Here is another thing I wish to call your attention to.

Many have the idea that the turned off angle is a great deal more accurate than the magnetic angle. The same care exercised in the one as in the other

will attain almost identical results. The comparisons of the two on a series of bearings for one hundred miles has shown but little divergence.

Yet it is always advisable to be on the watch for local interferences with the magnetic bearings, remembering that these change every day.

While the formula for working to the minute is given, yet, it is advisable not to split quarter and overlook whole degrees, being sure that as you approach the direct "E or W" or the "N and S" courses you do not get the reading on the wrong side.

The track or R. R. engineer, imagining that land surveying is a crude science with his ideas of minutes is as liable to serious errors as any. I could give many interesting incidents on this, but space in this little work does not permit.

Applying the system I have set out with the constant proofs of every step as shown in my formulae has enabled me to detect every form of error that the different classes, such as lawyers, courts, justices of the peace, chain carriers, surveyors and engineers frequently commit affecting the titles to real estate. Chain men as well as others are prone to insist that they are precisely right. I recall an instance of a short time ago where I was called to divide an estate of 100 acres valued at \$10,000. It was along "the crick that pap made the line" and the chain carriers dropped a chain on each side of the survey so that it closed fairly well but showed a shortage of over 5 acres, which caused them to readjust their divisions. After tabulating and calculating the area I felt sure they had erred in the chaining. Got the gentlemen and took them on the ground and had them chain it over in my presence, first on the creek side and found that they had reported a course too small by a chain. Tabulated the work and found that they had done the same thing at another place, put them on the course and made them find it. When they have argued themselves out and you show them where they are wrong a time or two they fear to say anything is right.

They look with open eyed wonder as to how you detect not only that they have given the wrong distance but that you tell them where they made the mistake. Insist that the same chain carriers are employed from beginning to end of the survey, see that the same instrument is used throughout and that the courses and distances are then taken, and not part at one time and part at another time. The most accurate measuring implement is perhaps the wooden rod, the next the steel tape and the last the surveyor's chain. It is the implement mostly used in land surveying. In making a survey it should be kept truly plumb level and true to the line. Attention to these things will cause the survey to close well and writing the results into the form I have given will get the true area with ease and absolute certainty. In following the form given by Trautwine, Davies, Duncan, Gelispie, or any that I have seen you may transpose figures write them down wrong and not discover your error. Following this plan, if you do put any thing down wrong the proof detects it and you have the opportunity to make the correction. A very little practice will make it very easy.

TRAVERSE TABLE

SHOWING LATITUDES AND DEPARTURE
FOR EACH QUARTER DEGREE OF
THE QUADRANT, AND FOR
DISTANCES FROM
1 TO 100.

TRAVERSE TABLE

1/4 DEGREE

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.									
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.									
1	1.00	0.00	21	21.00	0.09	41	41.00	0.18	61	61.00	0.27	81	81.00	0.35
2	2.00	0.01	22	22.00	0.10	42	42.00	0.18	62	62.00	0.27	82	82.00	0.36
3	3.00	0.01	23	23.00	0.10	43	43.00	0.19	63	63.00	0.27	83	83.00	0.36
4	4.00	0.02	24	24.00	0.10	44	44.00	0.19	64	64.00	0.28	84	84.00	0.37
5	5.00	0.02	25	25.00	0.11	45	45.00	0.20	65	65.00	0.28	85	85.00	0.37
6	6.00	0.03	26	26.00	0.11	46	46.00	0.20	66	66.00	0.29	86	86.00	0.38
7	7.00	0.03	27	27.00	0.12	47	47.00	0.21	67	67.00	0.29	87	87.00	0.38
8	8.00	0.03	28	28.00	0.12	48	48.00	0.21	68	68.00	0.30	88	88.00	0.38
9	9.00	0.04	29	29.00	0.13	49	49.00	0.21	69	69.00	0.30	89	89.00	0.39
10	10.00	0.04	30	30.00	0.13	50	50.00	0.22	70	70.00	0.31	90	90.00	0.39
11	11.00	0.05	31	31.00	0.14	51	51.00	0.22	71	71.00	0.31	91	91.00	0.40
12	12.00	0.05	32	32.00	0.14	52	52.00	0.23	72	72.00	0.31	92	92.00	0.40
13	13.00	0.06	33	33.00	0.14	53	53.00	0.23	73	73.00	0.32	93	93.00	0.41
14	14.00	0.06	34	34.00	0.15	54	54.00	0.24	74	74.00	0.32	94	94.00	0.41
15	15.00	0.07	35	35.00	0.15	55	55.00	0.24	75	75.00	0.33	95	95.00	0.41
16	16.00	0.07	36	36.00	0.16	56	56.00	0.24	76	76.00	0.33	96	96.00	0.42
17	17.00	0.07	37	37.00	0.16	57	57.00	0.25	77	77.00	0.34	97	97.00	0.42
18	18.00	0.08	38	38.00	0.17	58	58.00	0.25	78	78.00	0.34	98	98.00	0.43
19	19.00	0.08	39	39.00	0.17	59	59.00	0.26	79	79.00	0.34	99	99.00	0.43
20	20.00	0.09	40	40.00	0.17	60	60.00	0.26	80	80.00	0.35	100	100.00	0.44

89 3/4 DEGREES

1/2 DEGREE

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.									
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.									
1	1.00	0.01	21	21.00	0.18	41	41.00	0.36	61	61.00	0.53	81	81.00	0.71
2	2.00	0.02	22	22.00	0.19	42	42.00	0.37	62	62.00	0.54	82	82.00	0.72
3	3.00	0.03	23	23.00	0.20	43	43.00	0.38	63	63.00	0.55	83	83.00	0.72
4	4.00	0.03	24	24.00	0.21	44	44.00	0.38	64	64.00	0.56	84	84.00	0.73
5	5.00	0.04	25	25.00	0.22	45	45.00	0.39	65	65.00	0.57	85	85.00	0.74
6	6.00	0.05	26	26.00	0.23	46	46.00	0.40	66	66.00	0.58	86	86.00	0.75
7	7.00	0.06	27	27.00	0.24	47	47.00	0.41	67	67.00	0.58	87	87.00	0.76
8	8.00	0.07	28	28.00	0.24	48	48.00	0.42	68	68.00	0.59	88	88.00	0.77
9	9.00	0.08	29	29.00	0.25	49	49.00	0.43	69	69.00	0.60	89	89.00	0.78
10	10.00	0.09	30	30.00	0.26	50	50.00	0.44	70	70.00	0.61	90	90.00	0.79
11	11.00	0.10	31	31.00	0.27	51	51.00	0.45	71	71.00	0.62	91	91.00	0.79
12	12.00	0.10	32	32.00	0.28	52	52.00	0.45	72	72.00	0.63	92	92.00	0.80
13	13.00	0.11	33	33.00	0.29	53	53.00	0.46	73	73.00	0.64	93	93.00	0.81
14	14.00	0.12	34	34.00	0.30	54	54.00	0.47	74	74.00	0.65	94	94.00	0.82
15	15.00	0.13	35	35.00	0.31	55	55.00	0.48	75	75.00	0.65	95	95.00	0.83
16	16.00	0.14	36	36.00	0.31	56	56.00	0.49	76	76.00	0.66	96	96.00	0.84
17	17.00	0.15	37	37.00	0.32	57	57.00	0.50	77	77.00	0.67	97	97.00	0.85
18	18.00	0.16	38	38.00	0.33	58	58.00	0.51	78	78.00	0.68	98	98.00	0.86
19	19.00	0.17	39	39.00	0.34	59	59.00	0.51	79	79.00	0.69	99	99.00	0.86
20	20.00	0.17	40	40.00	0.35	60	60.00	0.52	80	80.00	0.70	100	100.00	0.87

89 1/2 DEGREES

TRAVERSE TABLE

31

3/4 DEGREE

Dist.	Lat.	Dep.												
1	1.00	0.01	21	21.00	0.27	41	41.00	0.54	61	60.99	0.80	81	80.99	1.06
2	2.00	0.03	22	22.00	0.29	42	42.00	0.55	62	61.99	0.81	82	81.99	1.07
3	3.00	0.04	23	23.00	0.30	43	43.00	0.56	63	62.99	0.82	83	82.99	1.09
4	4.00	0.05	24	24.00	0.31	44	44.00	0.58	64	63.99	0.84	84	83.99	1.10
5	5.00	0.07	25	25.00	0.33	45	45.00	0.59	65	64.99	0.85	85	84.99	1.11
6	6.00	0.08	26	26.00	0.34	46	46.00	0.60	66	65.99	0.86	86	85.99	1.13
7	7.00	0.09	27	27.00	0.35	47	47.00	0.62	67	66.99	0.88	87	86.99	1.14
8	8.00	0.10	28	28.00	0.37	48	48.00	0.63	68	67.99	0.89	88	87.99	1.15
9	9.00	0.12	29	29.00	0.38	49	49.00	0.64	69	68.99	0.90	89	88.99	1.16
10	10.00	0.13	30	30.00	0.39	50	50.00	0.65	70	69.99	0.92	90	89.99	1.18
11	11.00	0.14	31	31.00	0.41	51	51.00	0.67	71	70.99	0.93	91	90.99	1.19
12	12.00	0.16	32	32.00	0.42	52	52.00	0.68	72	71.99	0.94	92	91.99	1.20
13	13.00	0.17	33	33.00	0.43	53	53.00	0.69	73	72.99	0.96	93	92.99	1.22
14	14.00	0.18	34	34.00	0.45	54	54.00	0.71	74	73.99	0.97	94	93.99	1.23
15	15.00	0.20	35	35.00	0.46	55	55.00	0.72	75	74.99	0.98	95	94.99	1.24
16	16.00	0.21	36	36.00	0.47	56	56.00	0.73	76	75.99	0.99	96	95.99	1.26
17	17.00	0.22	37	37.00	0.48	57	57.00	0.75	77	76.99	1.01	97	96.99	1.27
18	18.00	0.24	38	38.00	0.50	58	57.99	0.76	78	77.99	1.02	98	97.99	1.28
19	19.00	0.25	39	39.00	0.51	59	58.99	0.77	79	78.99	1.03	99	98.99	1.30
20	20.00	0.26	40	40.00	0.52	60	59.99	0.79	80	79.99	1.05	100	99.99	1.31

89 1/4 DEGREES

1 DEGREE

Dist.	Lat.	Dep.												
1	1.00	0.02	21	21.00	0.37	41	40.99	0.72	61	60.99	1.06	81	80.99	1.41
2	2.00	0.03	22	22.00	0.38	42	41.99	0.73	62	61.99	1.08	82	81.99	1.43
3	3.00	0.05	23	23.00	0.40	43	42.99	0.75	63	62.99	1.10	83	82.99	1.45
4	4.00	0.07	24	24.00	0.42	44	43.99	0.77	64	63.99	1.12	84	83.99	1.47
5	5.00	0.09	25	25.00	0.44	45	44.99	0.79	65	64.99	1.13	85	84.99	1.48
6	6.00	0.10	26	26.00	0.45	46	45.99	0.80	66	65.99	1.15	86	85.99	1.50
7	7.00	0.12	27	27.00	0.47	47	46.99	0.82	67	66.99	1.17	87	86.99	1.52
8	8.00	0.14	28	28.00	0.49	48	47.99	0.84	68	67.99	1.19	88	87.99	1.54
9	9.00	0.16	29	29.00	0.51	49	48.99	0.86	69	68.99	1.20	89	88.99	1.55
10	10.00	0.17	30	30.00	0.52	50	49.99	0.87	70	69.99	1.22	90	89.99	1.57
11	11.00	0.19	31	31.00	0.54	51	50.99	0.89	71	70.99	1.24	91	90.99	1.59
12	12.00	0.21	32	32.00	0.56	52	51.99	0.91	72	71.99	1.26	92	91.99	1.61
13	13.00	0.23	33	32.99	0.58	53	52.99	0.92	73	72.99	1.27	93	92.99	1.62
14	14.00	0.24	34	33.99	0.59	54	53.99	0.94	74	73.99	1.29	94	93.99	1.64
15	15.00	0.26	35	34.99	0.61	55	54.99	0.96	75	74.99	1.31	95	94.99	1.66
16	16.00	0.28	36	35.99	0.63	56	55.99	0.98	76	75.99	1.33	96	95.99	1.68
17	17.00	0.30	37	36.99	0.65	57	56.99	0.99	77	76.99	1.34	97	96.99	1.69
18	18.00	0.31	38	37.99	0.66	58	57.99	1.01	78	77.99	1.36	98	97.99	1.71
19	19.00	0.33	39	38.99	1.68	59	58.99	1.03	79	78.99	1.38	99	98.98	1.73
20	20.00	0.35	40	39.99	1.70	60	59.99	1.05	80	79.99	1.40	100	99.98	1.75

89 DEGREES

TRAVERSE TABLE

1¼ DEGREES.

Dist.	Lat.	Dep.												
1	1.00	0.02	21	21.00	0.46	41	40.99	0.89	61	60.99	1.33	81	80.98	1.77
2	2.00	0.04	22	21.99	0.48	42	41.99	0.92	62	61.99	1.35	82	81.98	1.79
3	3.00	0.07	23	22.99	0.50	43	42.99	0.94	63	62.99	1.37	83	82.98	1.81
4	4.00	0.09	24	23.99	0.52	44	43.99	0.96	64	63.98	1.40	84	83.98	1.83
5	5.00	0.11	25	24.99	0.55	45	44.99	0.98	65	64.98	1.42	85	84.98	1.85
6	6.00	0.13	26	25.99	0.57	46	45.99	1.00	66	65.98	1.44	86	85.98	1.88
7	7.00	0.15	27	26.99	0.59	47	46.99	1.03	67	66.98	1.46	87	86.98	1.90
8	8.00	0.17	28	27.99	0.61	48	47.99	1.05	68	67.98	1.48	88	87.98	1.92
9	9.00	0.20	29	28.99	0.63	49	48.99	1.07	69	68.98	1.51	89	88.98	1.94
10	10.00	0.22	30	29.99	0.65	50	49.99	1.09	70	69.98	1.53	90	89.98	1.96
11	11.00	0.24	31	30.99	0.68	51	50.99	1.11	71	70.98	1.55	91	90.98	1.99
12	12.00	0.26	32	31.99	0.70	52	51.99	1.13	72	71.98	1.57	92	91.98	2.01
13	13.00	0.28	33	32.99	0.72	53	52.99	1.16	73	72.98	1.59	93	92.98	2.03
14	14.00	0.31	34	33.99	0.74	54	53.99	1.18	74	73.98	1.61	94	93.98	2.05
15	15.00	0.33	35	34.99	0.76	55	54.99	1.20	75	74.98	1.64	95	94.98	2.07
16	16.00	0.35	36	35.99	0.79	56	55.99	1.22	76	75.98	1.66	96	95.98	2.09
17	17.00	0.37	37	36.99	0.81	57	56.99	1.24	77	76.98	1.68	97	96.98	2.12
18	18.00	0.39	38	37.99	0.83	58	57.99	1.27	78	77.98	1.70	98	97.98	2.14
19	19.00	0.41	39	38.99	0.85	59	58.99	1.29	79	78.98	1.72	99	98.98	2.16
20	20.00	0.44	40	39.99	0.87	60	59.99	1.31	80	79.98	1.75	100	99.98	2.18
Dist.	Dep.	Lat.												

88¾ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.03	21	20.99	0.55	41	40.99	1.07	61	60.98	1.60	81	80.97	2.12
2	2.00	0.05	22	21.99	0.58	42	41.99	1.10	62	61.98	1.62	82	81.97	2.15
3	3.00	0.08	23	22.99	0.60	43	42.99	1.13	63	62.98	1.65	83	82.97	2.17
4	4.00	0.10	24	23.99	0.63	44	43.99	1.15	64	63.98	1.68	84	83.97	2.20
5	5.00	0.13	25	24.99	0.65	45	44.99	1.18	65	64.98	1.70	85	84.97	2.23
6	6.00	0.16	26	25.99	0.68	46	45.99	1.20	66	65.98	1.73	86	85.97	2.25
7	7.00	0.18	27	26.99	0.71	47	46.99	1.23	67	66.98	1.75	87	86.97	2.28
8	8.00	0.21	28	27.99	0.73	48	47.98	1.26	68	67.98	1.78	88	87.97	2.30
9	9.00	0.24	29	28.99	0.76	49	48.98	1.28	69	68.98	1.81	89	88.97	2.33
10	10.00	0.26	30	29.99	0.79	50	49.98	1.31	70	69.98	1.83	90	89.97	2.36
11	11.00	0.28	31	30.99	0.81	51	50.98	1.34	71	70.98	1.86	91	90.97	2.38
12	12.00	0.31	32	31.99	0.84	52	51.98	1.36	72	71.98	1.88	92	91.97	2.41
13	13.00	0.34	33	32.99	0.86	53	52.98	1.39	73	72.97	1.91	93	92.97	2.43
14	14.00	0.37	34	33.99	0.89	54	53.98	1.41	74	73.97	1.94	94	93.97	2.46
15	14.99	0.39	35	34.99	0.92	55	54.98	1.44	75	74.97	1.96	95	94.97	2.49
16	15.99	0.42	36	35.99	0.94	56	55.98	1.47	76	75.97	1.99	96	95.97	2.51
17	16.99	0.45	37	36.99	0.97	57	56.98	1.49	77	76.97	2.02	97	96.97	2.54
18	17.99	0.47	38	37.99	0.99	58	57.98	1.52	78	77.97	2.04	98	97.97	2.57
19	18.99	0.50	39	38.99	1.02	59	58.98	1.54	79	78.97	2.07	99	98.97	2.59
20	19.99	0.52	40	39.99	1.05	60	59.98	1.57	80	79.97	2.09	100	99.97	2.62
Dist.	Dep.	Lat.												

88½ DEGREES

TRAVERSE TABLE

33

13½ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.03	21	20.99	0.64	41	40.98	1.25	61	60.97	1.86	81	80.96	2.47
2	2.00	0.06	22	21.99	0.67	42	41.98	1.28	62	61.97	1.89	82	81.96	2.50
3	3.00	0.09	23	22.99	0.70	43	42.98	1.31	63	62.97	1.92	83	82.96	2.53
4	4.00	0.12	24	23.99	0.73	44	43.98	1.34	64	63.97	1.95	84	83.96	2.57
5	5.00	0.15	25	24.99	0.76	45	44.98	1.37	65	64.97	1.99	85	84.96	2.60
6	6.00	0.18	26	25.99	0.79	46	45.98	1.40	66	65.97	2.02	86	85.96	2.63
7	7.00	0.21	27	26.99	0.83	47	46.98	1.44	67	66.97	2.05	87	86.96	2.66
8	8.00	0.25	28	27.99	0.86	48	47.98	1.47	68	67.97	2.08	88	87.96	2.69
9	9.00	0.28	29	28.99	0.89	49	48.98	1.50	69	68.97	2.11	89	88.96	2.72
10	10.00	0.31	30	29.99	0.92	50	49.98	1.53	70	69.97	2.14	90	89.96	2.75
11	10.99	0.34	31	30.99	0.95	51	50.98	1.56	71	70.97	2.17	91	90.96	2.78
12	11.99	0.37	32	31.99	0.98	52	51.98	1.59	72	71.97	2.20	92	91.96	2.81
13	12.99	0.40	33	32.98	1.01	53	52.98	1.62	73	72.97	2.23	93	92.96	2.84
14	13.99	0.43	34	33.98	1.04	54	53.97	1.65	74	73.97	2.26	94	93.96	2.87
15	14.99	0.46	35	34.98	1.07	55	54.97	1.68	75	74.97	2.29	95	94.96	2.90
16	15.99	0.49	36	35.98	1.10	56	55.97	1.71	76	75.96	2.32	96	95.96	2.94
17	16.99	0.52	37	36.98	1.13	57	56.97	1.74	77	76.96	2.35	97	96.95	2.96
18	17.99	0.55	38	37.98	1.16	58	57.97	1.77	78	77.96	2.38	98	97.95	2.99
19	18.99	0.58	39	38.98	1.19	59	58.97	1.80	79	78.96	2.41	99	98.95	3.02
20	19.99	0.61	40	39.98	1.22	60	59.97	1.83	80	79.96	2.44	100	99.95	3.05

Dist.	Dep.	Lat.												
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88½ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.03	21	20.99	0.73	41	40.98	1.43	61	60.96	2.13	81	80.95	2.83
2	2.00	0.07	22	21.99	0.77	42	41.97	1.47	62	61.96	2.16	82	81.95	2.86
3	3.00	0.10	23	22.99	0.80	43	42.97	1.50	63	62.96	2.20	83	82.95	2.90
4	4.00	0.14	24	23.99	0.84	44	43.97	1.54	64	63.96	2.23	84	83.95	2.93
5	5.00	0.17	25	24.98	0.87	45	44.97	1.57	65	64.96	2.27	85	84.95	2.97
6	6.00	0.21	26	25.98	0.91	46	45.97	1.61	66	65.96	2.30	86	85.95	3.00
7	7.00	0.24	27	26.98	0.94	47	46.97	1.64	67	66.96	2.34	87	86.95	3.04
8	7.99	0.28	28	27.98	0.98	48	47.97	1.68	68	67.96	2.37	88	87.95	3.07
9	8.99	0.31	29	28.98	1.01	49	48.97	1.71	69	68.96	2.41	89	88.95	3.11
10	9.99	0.35	30	29.98	1.05	50	49.97	1.74	70	69.96	2.44	90	89.95	3.14
11	10.99	0.38	31	30.98	1.08	51	50.97	1.78	71	70.96	2.48	91	90.95	3.18
12	11.99	0.42	32	31.98	1.12	52	51.97	1.81	72	71.96	2.51	92	91.94	3.21
13	12.99	0.45	33	32.98	1.15	53	52.97	1.85	73	72.96	2.55	93	92.94	3.25
14	13.99	0.49	34	33.98	1.19	54	53.97	1.88	74	73.95	2.58	94	93.94	3.28
15	14.99	0.52	35	34.98	1.22	55	54.97	1.92	75	74.95	2.62	95	94.94	3.32
16	15.99	0.56	36	35.98	1.26	56	55.97	1.95	76	75.95	2.65	96	95.94	3.35
17	16.99	0.59	37	36.98	1.29	57	56.97	1.99	77	76.95	2.69	97	96.94	3.39
18	17.99	0.63	38	37.98	1.33	58	57.96	2.02	78	77.95	2.72	98	97.94	3.42
19	18.99	0.66	39	38.98	1.36	59	58.96	2.06	79	78.95	2.76	99	98.94	3.46
20	19.99	0.70	40	39.98	1.40	60	59.96	2.09	80	79.95	2.79	100	99.94	3.49

Dist.	Dep.	Lat.												
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88 DEGREES

TRAVERSE TABLE

2¼ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.04	21	20.98	0.82	41	40.97	1.61	61	60.95	2.39	81	80.94	3.18
2	2.00	0.08	22	21.98	0.86	42	41.97	1.65	62	61.95	2.43	82	81.94	3.22
3	3.00	0.12	23	22.98	0.90	43	42.97	1.69	63	62.95	2.47	83	82.94	3.26
4	4.00	0.16	24	23.98	0.94	44	43.97	1.73	64	63.95	2.51	84	83.94	3.30
5	5.00	0.20	25	24.98	0.98	45	44.97	1.77	65	64.95	2.55	85	84.93	3.34
6	6.00	0.24	26	25.98	1.02	46	45.96	1.81	66	65.95	2.59	86	85.93	3.38
7	6.99	0.27	27	26.98	1.06	47	46.96	1.85	67	66.95	2.63	87	86.93	3.42
8	7.99	0.31	28	27.98	1.10	48	47.96	1.88	68	67.95	2.67	88	87.93	3.45
9	8.99	0.35	29	28.98	1.14	49	48.96	1.92	69	68.95	2.71	89	88.93	3.49
10	9.99	0.39	30	29.98	1.18	50	49.96	1.96	70	69.95	2.75	90	89.93	3.53
11	10.99	0.43	31	30.98	1.22	51	50.96	2.00	71	70.95	2.79	91	90.93	3.57
12	11.99	0.47	32	31.98	1.26	52	51.96	2.04	72	71.94	2.83	92	91.93	3.61
13	12.99	0.51	33	32.97	1.30	53	52.96	2.08	73	72.94	2.87	93	92.93	3.65
14	13.99	0.55	34	33.97	1.33	54	53.96	2.12	74	73.94	2.91	94	93.93	3.69
15	14.99	0.59	35	34.97	1.37	55	54.96	2.16	75	74.94	2.94	95	94.93	3.73
16	15.99	0.63	36	35.97	1.41	56	55.96	2.20	76	75.94	2.98	96	95.93	3.77
17	16.99	0.67	37	36.97	1.45	57	56.96	2.24	77	76.94	3.02	97	96.93	3.81
18	17.99	0.71	38	37.97	1.49	58	57.96	2.28	78	77.94	3.06	98	97.92	3.85
19	18.99	0.75	39	38.97	1.53	59	58.95	2.32	79	78.94	3.10	99	98.92	3.89
20	19.98	0.79	40	39.97	1.57	60	59.95	2.36	80	79.94	3.14	100	99.92	3.93

87¾ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.04	21	20.98	0.92	41	40.96	1.77	61	60.94	2.66	81	80.92	3.53
2	2.00	0.09	22	21.98	0.96	42	41.96	1.83	62	61.94	2.70	82	81.92	3.58
3	3.00	0.13	23	22.98	1.00	43	42.96	1.88	63	62.94	2.75	83	82.92	3.62
4	4.00	0.17	24	23.98	1.05	44	43.96	1.92	64	63.94	2.79	84	83.92	3.66
5	5.00	0.22	25	24.98	1.09	45	44.96	1.96	65	64.94	2.84	85	84.92	3.71
6	5.99	0.26	26	25.98	1.13	46	45.96	2.01	66	65.94	2.88	86	85.92	3.75
7	6.99	0.31	27	26.97	1.18	47	46.96	2.05	67	66.94	2.92	87	86.92	3.79
8	7.99	0.35	28	27.97	1.22	48	47.95	2.09	68	67.94	2.97	88	87.92	3.84
9	8.99	0.39	29	28.97	1.26	49	48.95	2.14	69	68.93	3.01	89	88.92	3.88
10	9.99	0.44	30	29.97	1.31	50	49.95	2.18	70	69.93	3.05	90	89.91	3.93
11	10.99	0.48	31	30.97	1.35	51	50.95	2.22	71	70.93	3.10	91	90.91	3.97
12	11.99	0.52	32	31.97	1.40	52	51.95	2.27	72	71.93	3.14	92	91.91	4.01
13	12.99	0.57	33	32.97	1.44	53	52.95	2.31	73	72.93	3.18	93	92.91	4.06
14	13.99	0.61	34	33.97	1.48	54	53.95	2.36	74	73.93	3.23	94	93.91	4.10
15	14.99	0.65	35	34.97	1.53	55	54.95	2.40	75	74.93	3.27	95	94.91	4.14
16	15.99	0.70	36	35.97	1.57	56	55.95	2.44	76	75.93	3.31	96	95.91	4.19
17	16.98	0.74	37	36.96	1.61	57	56.95	2.49	77	76.93	3.36	97	96.91	4.23
18	17.98	0.79	38	37.96	1.66	58	57.94	2.53	78	77.93	3.40	98	97.91	4.27
19	18.98	0.83	39	38.96	1.70	59	58.94	2.57	79	78.92	3.45	99	98.91	4.32
20	19.98	0.87	40	39.96	1.75	60	59.94	2.62	80	79.92	3.49	100	99.91	4.36

87½ DEGREES

TRAVERSE TABLE

35

23½ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.05	21	20.98	1.01	41	40.95	1.97	61	60.93	2.93	81	80.91	3.89
2	2.00	0.10	22	21.97	1.06	42	41.95	2.02	62	61.93	2.97	82	81.91	3.93
3	3.00	0.14	23	22.97	1.10	43	42.95	2.06	63	62.93	3.02	83	82.90	3.98
4	4.00	0.19	24	23.97	1.15	44	43.95	2.11	64	63.93	3.07	84	83.90	4.03
5	4.99	0.24	25	24.97	1.20	45	44.95	2.16	65	64.93	3.12	85	84.90	4.08
6	5.99	0.29	26	25.97	1.25	46	45.95	2.21	66	65.92	3.17	86	85.90	4.13
7	6.99	0.34	27	26.97	1.30	47	46.95	2.25	67	66.92	3.21	87	86.90	4.17
8	7.99	0.38	28	27.97	1.34	48	47.95	2.30	68	67.92	3.26	88	87.90	4.22
9	8.99	0.43	29	28.97	1.39	49	48.94	2.35	69	68.92	3.31	89	88.90	4.27
10	9.99	0.48	30	29.97	1.44	50	49.94	2.40	70	69.92	3.36	90	89.90	4.32
11	10.99	0.53	31	30.96	1.49	51	50.94	2.45	71	70.92	3.41	91	90.90	4.37
12	11.99	0.58	32	31.96	1.54	52	51.94	2.50	72	71.92	3.45	92	91.89	4.41
13	12.99	0.62	33	32.96	1.58	53	52.94	2.54	73	72.92	3.50	93	92.89	4.46
14	13.98	0.67	34	33.96	1.63	54	53.94	2.59	74	73.91	3.55	94	93.89	4.51
15	14.98	0.72	35	34.96	1.68	55	54.94	2.64	75	74.91	3.60	95	94.89	4.56
16	15.98	0.77	36	35.96	1.73	56	55.94	2.69	76	75.91	3.65	96	95.89	4.61
17	16.98	0.82	37	36.96	1.78	57	56.93	2.73	77	76.91	3.70	97	96.89	4.65
18	17.98	0.86	38	37.96	1.82	58	57.93	2.78	78	77.91	3.74	98	97.89	4.70
19	18.98	0.91	39	38.96	1.87	59	58.93	2.83	79	78.91	3.79	99	98.89	4.75
20	19.98	0.96	40	39.95	1.92	60	59.93	2.88	80	79.91	3.84	100	99.88	4.80
Dist.	Dep.	Lat.												

87½ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.05	21	20.97	1.10	41	40.94	2.15	61	60.92	3.19	81	80.89	4.24
2	2.00	0.10	22	21.97	1.15	42	41.94	2.20	62	61.92	3.24	82	81.89	4.29
3	3.00	0.16	23	22.97	1.20	43	42.94	2.25	63	62.91	3.30	83	82.89	4.34
4	3.99	0.21	24	23.97	1.26	44	43.94	2.30	64	63.91	3.35	84	83.88	4.40
5	4.99	0.26	25	24.97	1.31	45	44.94	2.36	65	64.91	3.40	85	84.88	4.45
6	5.99	0.31	26	25.96	1.36	46	45.94	2.41	66	65.91	3.45	86	85.88	4.50
7	6.99	0.37	27	26.96	1.41	47	46.94	2.46	67	66.91	3.51	87	86.88	4.55
8	7.99	0.42	28	27.96	1.47	48	47.93	2.51	68	67.91	3.56	88	87.88	4.61
9	8.99	0.47	29	28.96	1.52	49	48.93	2.56	69	68.91	3.61	89	88.88	4.66
10	9.99	0.52	30	29.96	1.57	50	49.93	2.62	70	69.90	3.66	90	89.88	4.71
11	10.98	0.58	31	30.96	1.62	51	50.93	2.67	71	70.90	3.72	91	90.88	4.76
12	11.98	0.63	32	31.96	1.67	52	51.93	2.72	72	71.90	3.77	92	91.87	4.81
13	12.98	0.68	33	32.95	1.73	53	52.93	2.77	73	72.90	3.82	93	92.87	4.87
14	13.98	0.73	34	33.95	1.78	54	53.93	2.83	74	73.90	3.87	94	93.87	4.92
15	14.98	0.79	35	34.95	1.83	55	54.92	2.88	75	74.90	3.93	95	94.87	4.97
16	15.98	0.84	36	35.95	1.88	56	55.92	2.93	76	75.90	3.98	96	95.87	5.02
17	16.98	0.89	37	36.95	1.94	57	56.92	2.98	77	76.89	4.03	97	96.87	5.08
18	17.98	0.94	38	37.95	1.99	58	57.92	3.04	78	77.89	4.08	98	97.87	5.13
19	18.98	0.99	39	38.95	2.04	59	58.92	3.09	79	78.89	4.13	99	98.86	5.18
20	19.97	1.05	40	39.95	2.09	60	59.92	3.14	80	79.89	4.19	100	99.86	5.23
Dist.	Dep.	Lat.												

87 DEGREES

TRAVERSE TABLE

3¼ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.06	21	20.97	1.19	41	40.93	2.32	61	60.90	3.46	81	80.87	4.59
2	2.00	0.11	22	21.96	1.25	42	41.93	2.38	62	61.90	3.51	82	81.87	4.65
3	3.00	0.17	23	22.96	1.30	43	42.93	2.44	63	62.90	3.57	83	82.87	4.71
4	3.99	0.23	24	23.96	1.36	44	43.93	2.49	64	63.90	3.63	84	83.86	4.76
5	4.99	0.28	25	24.96	1.42	45	44.93	2.55	65	64.90	3.69	85	84.86	4.82
6	5.99	0.34	26	25.96	1.47	46	45.93	2.61	66	65.89	3.74	86	85.86	4.88
7	6.99	0.40	27	26.96	1.53	47	46.92	2.66	67	66.89	3.80	87	86.86	4.93
8	7.99	0.45	28	27.95	1.59	48	47.92	2.72	68	67.89	3.86	88	87.86	4.99
9	8.99	0.51	29	28.95	1.64	49	48.92	2.78	69	68.89	3.91	89	88.86	5.05
10	9.98	0.57	30	29.95	1.70	50	49.92	2.83	70	69.89	3.97	90	89.86	5.10
11	10.98	0.62	31	30.95	1.76	51	50.92	2.89	71	70.89	4.03	91	90.85	5.16
12	11.98	0.68	32	31.95	1.81	52	51.92	2.95	72	71.88	4.08	92	91.85	5.22
13	12.98	0.73	33	32.95	1.87	53	52.91	3.00	73	72.88	4.14	93	92.85	5.27
14	13.98	0.79	34	33.95	1.93	54	53.91	3.06	74	73.88	4.20	94	93.85	5.33
15	14.98	0.85	35	34.94	1.98	55	54.91	3.12	75	74.88	4.25	95	94.85	5.39
16	15.97	0.91	36	35.94	2.04	56	55.91	3.17	76	75.88	4.31	96	95.85	5.44
17	16.97	0.96	37	36.94	2.10	57	56.91	3.23	77	76.88	4.37	97	96.84	5.50
18	17.97	1.02	38	37.94	2.15	58	57.91	3.29	78	77.87	4.42	98	97.84	5.56
19	18.97	1.08	39	38.94	2.21	59	58.91	3.34	79	78.87	4.48	99	98.84	5.61
20	19.97	1.13	40	39.94	2.27	60	59.90	3.40	80	79.87	4.54	100	99.84	5.67

86¾ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.06	21	20.96	1.28	41	40.92	2.50	61	60.89	3.72	81	80.85	4.94
2	2.00	0.12	22	21.96	1.34	42	41.92	2.56	62	61.88	3.79	82	81.85	5.01
3	2.99	0.18	23	22.96	1.40	43	42.92	2.63	63	62.88	3.85	83	82.85	5.07
4	3.99	0.24	24	23.96	1.47	44	43.92	2.69	64	63.88	3.91	84	83.84	5.13
5	4.99	0.31	25	24.95	1.53	45	44.92	2.75	65	64.88	3.97	85	84.84	5.19
6	5.99	0.37	26	25.95	1.59	46	45.91	2.81	66	65.88	4.03	86	85.84	5.25
7	6.99	0.43	27	26.95	1.65	47	46.91	2.87	67	66.88	4.09	87	86.84	5.31
8	7.99	0.49	28	27.95	1.71	48	47.91	2.93	68	67.87	4.15	88	87.84	5.37
9	8.98	0.55	29	28.95	1.77	49	48.91	2.99	69	68.87	4.21	89	88.83	5.43
10	9.98	0.61	30	29.94	1.83	50	49.91	3.05	70	69.87	4.27	90	89.83	5.49
11	10.98	0.67	31	30.94	1.89	51	50.90	3.11	71	70.87	4.33	91	90.83	5.56
12	11.98	0.73	32	31.94	1.95	52	51.90	3.17	72	71.87	4.40	92	91.83	5.62
13	12.98	0.79	33	32.94	2.01	53	52.90	3.24	73	72.86	4.46	93	92.83	5.68
14	13.97	0.85	34	33.94	2.08	54	53.90	3.30	74	73.86	4.52	94	93.82	5.74
15	14.97	0.92	35	34.93	2.14	55	54.90	3.36	75	74.86	4.58	95	94.82	5.80
16	15.97	0.98	36	35.93	2.20	56	55.90	3.42	76	75.86	4.64	96	95.82	5.86
17	16.97	1.04	37	36.93	2.26	57	56.89	3.48	77	76.86	4.70	97	96.82	5.92
18	17.97	1.10	38	37.93	2.32	58	57.89	3.54	78	77.85	4.76	98	97.82	5.98
19	18.96	1.16	39	38.93	2.38	59	58.89	3.60	79	78.85	4.82	99	98.82	6.04
20	19.96	1.22	40	39.93	2.44	60	59.89	3.66	80	79.85	4.88	100	99.81	6.10

86½ DEGREES

TRAVERSE TABLE

37

33½ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.05	21	20.96	1.37	41	40.91	2.68	61	60.87	3.99	81	80.83	5.30
2	2.00	0.13	22	21.95	1.44	42	41.91	2.75	62	61.87	4.05	82	81.82	5.36
3	2.99	0.20	23	22.95	1.50	43	42.91	2.81	63	62.87	4.12	83	82.82	5.43
4	3.99	0.26	24	23.95	1.57	44	43.91	2.88	64	63.86	4.19	84	83.82	5.49
5	4.99	0.33	25	24.95	1.64	45	44.90	2.94	65	64.86	4.25	85	84.82	5.56
6	5.99	0.39	26	25.94	1.70	46	45.90	3.01	66	65.86	4.32	86	85.82	5.62
7	6.99	0.46	27	26.94	1.77	47	46.90	3.07	67	66.86	4.38	87	86.81	5.69
8	7.98	0.52	28	27.94	1.83	48	47.90	3.14	68	67.85	4.45	88	87.81	5.76
9	8.98	0.59	29	28.94	1.90	49	48.90	3.20	69	68.85	4.51	89	88.81	5.82
10	9.98	0.65	30	29.94	1.96	50	49.89	3.27	70	69.85	4.58	90	89.81	5.89
11	10.98	0.72	31	30.93	2.03	51	50.89	3.34	71	70.85	4.64	91	90.81	5.95
12	11.97	0.78	32	31.93	2.09	52	51.89	3.40	72	71.85	4.71	92	91.80	6.02
13	12.97	0.85	33	32.93	2.16	53	52.89	3.47	73	72.84	4.77	93	92.80	6.08
14	13.97	0.92	34	33.93	2.22	54	53.88	3.53	74	73.84	4.84	94	93.80	6.15
15	14.97	0.98	35	34.92	2.29	55	54.88	3.60	75	74.84	4.91	95	94.89	6.21
16	15.97	1.05	36	35.92	2.35	56	55.88	3.66	76	75.84	4.97	96	95.79	6.28
17	16.96	1.11	37	36.92	2.42	57	56.88	3.73	77	76.84	5.04	97	96.79	6.34
18	17.96	1.18	38	37.92	2.49	58	57.88	3.79	78	77.83	5.10	98	97.79	6.41
19	18.96	1.24	39	38.92	2.55	59	58.87	3.86	79	78.83	5.17	99	98.79	6.47
20	19.96	1.31	40	39.91	2.62	60	59.87	3.92	80	79.83	5.23	100	99.79	6.54

Dist.	Dep.	Lat.												
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86¼ DEGREES

4 DEGREES														
1	1.00	0.07	21	20.95	1.46	41	40.90	2.86	61	60.85	4.26	81	80.80	5.65
2	2.00	0.14	22	21.95	1.53	42	41.90	2.93	62	61.85	4.32	82	81.80	5.72
3	2.99	0.21	23	22.94	1.60	43	42.90	3.00	63	62.85	4.39	83	82.80	5.79
4	3.99	0.28	24	23.94	1.67	44	43.89	3.07	64	63.84	4.46	84	83.80	5.86
5	4.99	0.35	25	24.94	1.74	45	44.89	3.14	65	64.84	4.53	85	84.79	5.93
6	5.99	0.42	26	25.94	1.81	46	45.89	3.21	66	65.84	4.60	86	85.79	6.00
7	6.98	0.49	27	26.93	1.88	47	46.89	3.28	67	66.84	4.67	87	85.79	6.07
8	7.98	0.56	28	27.93	1.95	48	47.88	3.35	68	67.83	4.74	88	87.79	6.14
9	8.98	0.63	29	28.93	2.02	49	48.88	3.42	69	68.83	4.81	89	88.78	6.21
10	9.98	0.70	30	29.93	2.09	50	49.88	3.49	70	69.83	4.88	90	89.78	6.28
11	10.97	0.77	31	30.92	2.16	51	50.88	3.56	71	70.83	4.95	91	90.78	6.35
12	11.97	0.84	32	31.92	2.23	52	51.87	3.63	72	71.82	5.02	92	91.78	6.42
13	12.97	0.91	33	32.92	2.30	53	52.87	3.70	73	72.82	5.09	93	92.77	6.49
14	13.97	0.98	34	33.92	2.37	54	53.87	3.77	74	73.82	5.16	94	93.77	6.56
15	14.96	1.05	35	34.91	2.44	55	54.87	3.84	75	74.82	5.23	95	94.77	6.63
16	15.96	1.12	36	35.91	2.51	56	55.86	3.91	76	75.81	5.30	96	95.77	6.70
17	16.96	1.19	37	36.91	2.58	57	56.86	3.98	77	76.81	5.37	97	96.76	6.77
18	17.96	1.26	38	37.91	2.65	58	57.86	4.05	78	77.81	5.44	98	97.76	6.84
19	18.95	1.33	39	38.96	2.72	59	58.86	4.12	79	78.81	5.51	99	98.76	6.91
20	19.95	1.40	40	39.96	2.79	60	59.85	4.19	80	79.81	5.58	100	99.76	6.98

Dist.	Dep.	Lat.												
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TRAVERSE TABLE

4¼ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.07	21	20.94	1.56	41	40.89	3.04	61	60.83	4.52	81	80.78	6.00
2	1.99	0.15	22	21.94	1.63	42	41.88	3.11	62	61.83	4.59	82	81.78	6.08
3	2.99	0.22	23	22.94	1.70	43	42.88	3.19	63	62.83	4.67	83	82.77	6.15
4	3.99	0.30	24	23.93	1.78	44	43.88	3.26	64	63.82	4.74	84	83.77	6.23
5	4.99	0.37	25	24.93	1.85	45	44.88	3.33	65	64.82	4.82	85	84.77	6.30
6	5.98	0.44	26	25.93	1.93	46	45.87	3.41	66	65.82	4.89	86	85.76	6.37
7	6.98	0.52	27	26.93	2.00	47	46.87	3.48	67	66.82	4.97	87	86.76	6.45
8	7.98	0.59	28	27.92	2.08	48	47.87	3.56	68	67.81	5.04	88	87.76	6.52
9	8.98	0.67	29	28.92	2.15	49	48.87	3.63	69	68.81	5.11	89	88.76	6.60
10	9.97	0.74	30	29.92	2.22	50	49.86	3.71	70	69.81	5.19	90	89.75	6.67
11	10.97	0.82	31	30.91	2.30	51	50.86	3.78	71	70.80	5.26	91	90.75	6.74
12	11.97	0.89	32	31.91	2.37	52	51.86	3.85	72	71.80	5.34	92	91.75	6.82
13	12.96	0.96	33	32.91	2.45	53	52.85	3.93	73	72.80	5.41	93	92.74	6.89
14	13.96	1.04	34	33.91	2.52	54	53.85	4.00	74	73.80	5.48	94	93.74	6.97
15	14.96	1.11	35	34.90	2.59	55	54.85	4.08	75	74.79	5.56	95	94.74	7.04
16	15.96	1.19	36	35.90	2.67	56	55.85	4.15	76	75.79	5.63	96	95.74	7.11
17	16.95	1.26	37	36.90	2.74	57	56.84	4.22	77	76.79	5.71	97	96.73	7.19
18	17.95	1.33	38	37.90	2.82	58	57.84	4.30	78	77.79	5.78	98	97.73	7.26
19	18.95	1.40	39	38.89	2.89	59	58.84	4.37	79	78.78	5.85	99	98.73	7.34
20	19.95	1.48	40	39.89	2.96	60	59.84	4.45	80	79.78	5.93	100	99.73	7.41

85¾ DEGREES

4½ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.08	21	20.94	1.65	41	40.87	3.22	61	60.81	4.79	81	80.75	6.36
2	1.99	0.16	22	21.93	1.73	42	41.87	3.30	62	61.81	4.86	82	81.75	6.43
3	2.99	0.24	23	22.93	1.80	43	42.87	3.37	63	62.81	4.94	83	82.74	6.51
4	3.99	0.31	24	23.93	1.88	44	43.86	3.45	64	63.80	5.02	84	83.74	6.59
5	4.98	0.39	25	24.92	1.96	45	44.86	3.53	65	64.89	5.10	85	84.74	6.67
6	5.98	0.47	26	25.92	2.04	46	45.86	3.61	66	65.80	5.18	86	85.73	6.75
7	6.98	0.55	27	26.92	2.12	47	46.86	3.69	67	66.79	5.26	87	86.73	6.83
8	7.98	0.63	28	27.91	2.20	48	47.85	3.77	68	67.79	5.34	88	87.73	6.90
9	8.97	0.71	29	28.91	2.28	49	48.85	3.84	69	68.79	5.41	89	88.73	6.98
10	9.97	0.78	30	29.91	2.35	50	49.85	3.92	70	69.78	5.49	90	89.72	7.06
11	10.97	0.86	31	30.90	2.43	51	50.84	4.00	71	70.78	5.57	91	90.72	7.14
12	11.96	0.94	32	31.90	2.51	52	51.84	4.08	72	71.78	5.65	92	91.72	7.22
13	12.96	1.02	33	32.90	2.59	53	52.84	4.16	73	72.77	5.73	93	92.71	7.30
14	13.96	1.10	34	33.90	2.67	54	53.83	4.24	74	73.77	5.81	94	93.71	7.38
15	14.95	1.18	35	34.89	2.75	55	54.83	4.32	75	74.77	5.88	95	94.71	7.45
16	15.95	1.26	36	35.89	2.82	56	55.83	4.39	76	75.77	5.96	96	95.70	7.53
17	16.95	1.33	37	36.89	2.90	57	56.82	4.47	77	76.76	6.04	97	96.70	7.61
18	17.94	1.41	38	37.88	2.98	58	57.82	4.55	78	77.76	6.12	98	97.70	7.69
19	18.94	1.49	39	38.88	3.06	59	58.82	4.63	79	78.76	6.20	99	98.69	7.77
20	19.94	1.57	40	39.88	3.14	60	59.82	4.71	80	79.75	6.28	100	99.69	7.85

85½ DEGREES

TRAVERSE TABLE

39

43 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.08	21	20.93	1.74	41	40.86	3.40	61	60.79	5.05	81	80.72	6.71
2	1.99	0.17	22	21.92	1.82	42	41.86	3.48	62	61.79	5.13	82	81.72	6.79
3	2.99	0.25	23	22.92	1.90	43	42.85	3.56	63	62.78	5.22	83	82.71	6.87
4	3.98	0.33	24	23.92	1.99	44	43.85	3.64	64	63.78	5.30	84	83.71	6.96
5	4.98	0.41	25	24.91	2.07	45	44.85	3.73	65	64.78	5.38	85	84.71	7.04
6	5.98	0.50	26	25.91	2.15	46	45.84	3.81	66	65.77	5.47	86	85.70	7.12
7	6.97	0.58	27	26.91	2.24	47	46.84	3.89	67	66.77	5.55	87	86.70	7.20
8	7.97	0.66	28	27.96	2.32	48	47.84	3.97	68	67.77	5.63	88	87.70	7.29
9	8.97	0.75	29	28.90	2.40	49	48.83	4.06	69	68.76	5.71	89	88.70	7.37
10	9.97	0.83	30	29.96	2.48	50	49.83	4.14	70	69.76	5.80	90	89.69	7.45
11	10.96	0.91	31	30.89	2.57	51	50.82	4.22	71	70.76	5.88	91	90.69	7.54
12	11.96	0.99	32	31.89	2.65	52	51.82	4.31	72	71.75	5.96	92	91.68	7.62
13	12.96	1.08	33	32.89	2.73	53	52.82	4.39	73	72.75	6.04	93	92.68	7.70
14	13.95	1.16	34	33.88	2.82	54	53.81	4.47	74	73.75	6.13	94	93.68	7.78
15	14.95	1.24	35	34.88	2.90	55	54.81	4.55	75	74.74	6.21	95	94.67	7.87
16	15.95	1.32	36	35.88	2.98	56	55.81	4.64	76	75.74	6.29	96	95.67	7.95
17	16.94	1.41	37	36.87	3.06	57	56.80	4.72	77	76.74	6.38	97	96.67	8.03
18	17.94	1.49	38	37.87	3.15	58	57.80	4.80	78	77.73	6.46	98	97.66	8.12
19	18.93	1.57	39	38.87	3.23	59	58.80	4.89	79	78.73	6.54	99	98.66	8.20
20	19.93	1.66	40	39.86	3.31	60	59.79	4.97	80	79.73	6.62	100	99.66	8.28

85 $\frac{1}{4}$ DEGREES

5 DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.09	21	20.92	1.83	41	40.84	3.57	61	60.77	5.32	81	80.69	7.06
2	1.99	0.17	22	21.92	1.92	42	41.84	3.66	62	61.76	5.40	82	81.69	7.15
3	2.99	0.26	23	22.91	2.00	43	42.84	3.75	63	62.76	5.49	83	82.68	7.23
4	3.98	0.35	24	23.91	2.09	44	43.83	3.83	64	63.76	5.58	84	83.68	7.32
5	4.98	0.44	25	24.90	2.18	45	44.83	3.92	65	64.75	5.67	85	84.68	7.41
6	5.98	0.52	26	25.90	2.27	46	45.82	4.01	66	65.75	5.75	86	85.67	7.50
7	6.97	0.61	27	26.90	2.35	47	46.82	4.10	67	66.75	5.84	87	86.67	7.58
8	7.97	0.70	28	27.89	2.44	48	47.82	4.18	68	67.74	5.93	88	87.67	7.67
9	8.97	0.78	29	28.89	2.53	49	48.81	4.27	69	68.74	6.01	89	88.66	7.76
10	9.96	0.87	30	29.89	2.61	50	49.81	4.36	70	69.73	6.10	90	89.66	7.84
11	10.96	0.96	31	30.88	2.70	51	50.81	4.44	71	70.73	6.19	91	90.65	7.93
12	11.95	1.05	32	31.88	2.79	52	51.80	4.53	72	71.73	6.28	92	91.65	8.02
13	12.95	1.13	33	32.87	2.88	53	52.80	4.62	73	72.72	6.36	93	92.65	8.11
14	13.95	1.22	34	33.87	2.96	54	53.79	4.71	74	73.72	6.45	94	93.64	8.19
15	14.94	1.31	35	34.87	3.05	55	54.79	4.79	75	74.71	6.54	95	94.64	8.28
16	15.94	1.39	36	35.86	3.14	56	55.79	4.88	76	75.71	6.62	96	95.63	8.37
17	16.94	1.48	37	36.86	3.22	57	56.78	4.97	77	76.71	6.71	97	96.63	8.45
18	17.93	1.57	38	37.86	3.31	58	57.78	5.06	78	77.70	6.80	98	97.63	8.54
19	18.93	1.66	39	38.85	3.40	59	58.78	5.14	79	78.70	6.89	99	98.62	8.63
20	19.92	1.74	40	39.85	3.49	60	59.77	5.23	80	79.70	6.97	100	99.62	8.72

85 DEGREES

TRAVERSE TABLE

5¼ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.09	21	20.91	1.92	41	40.83	3.75	61	60.74	5.58	81	80.66	7.41
2	1.99	0.18	22	21.91	2.01	42	41.82	3.84	62	61.74	5.67	82	81.66	7.50
3	2.99	0.27	23	22.90	2.10	43	42.82	3.93	63	62.74	5.76	83	82.65	7.59
4	3.98	0.37	24	23.90	2.20	44	43.82	4.03	64	63.73	5.86	84	83.65	7.69
5	4.98	0.46	25	24.90	2.29	45	44.81	4.12	65	64.73	5.95	85	84.64	7.78
6	5.97	0.55	26	25.89	2.38	46	45.81	4.21	66	65.72	6.04	86	85.64	7.87
7	6.97	0.64	27	26.89	2.47	47	46.80	4.30	67	66.72	6.13	87	86.64	7.96
8	7.97	0.73	28	27.88	2.56	48	47.80	4.39	68	67.71	6.22	88	87.63	8.05
9	8.96	0.82	29	28.88	2.65	49	48.79	4.48	69	68.71	6.31	89	88.63	8.14
10	9.96	0.92	30	29.87	2.75	50	49.79	4.58	70	69.71	6.41	90	89.62	8.24
11	10.95	1.01	31	30.87	2.84	51	50.79	4.67	71	70.70	6.50	91	90.62	8.33
12	11.95	1.10	32	31.87	2.93	52	51.78	4.76	72	71.70	6.59	92	91.61	8.42
13	12.95	1.19	33	32.86	3.02	53	52.78	4.85	73	72.69	6.68	93	92.61	8.51
14	13.94	1.28	34	33.86	3.11	54	53.77	4.94	74	73.69	6.77	94	93.61	8.60
15	14.94	1.37	35	34.85	3.20	55	54.77	5.03	75	74.69	6.86	95	94.60	8.69
16	15.93	1.46	36	35.85	3.29	56	55.77	5.12	76	75.68	6.95	96	95.60	8.78
17	16.93	1.56	37	36.84	3.39	57	56.76	5.22	77	76.68	7.05	97	96.59	8.88
18	17.92	1.65	38	37.84	3.48	58	57.76	5.31	78	77.67	7.14	98	97.59	8.97
19	18.92	1.74	39	38.84	3.57	59	58.75	5.40	79	78.67	7.23	99	98.59	9.06
20	19.92	1.83	40	39.83	3.66	60	59.75	5.49	80	79.63	7.32	100	99.58	9.15
Dist.	Dep.	Lat.												

84¾ DEGREES

Dist.	Lat.	Dep.												
1	1.00	0.10	21	20.90	2.01	41	40.81	3.93	61	60.72	5.85	81	80.63	7.76
2	1.99	0.19	22	21.90	2.11	42	41.81	4.03	62	61.71	5.94	82	81.62	7.86
3	2.99	0.29	23	22.89	2.20	43	42.80	4.12	63	62.71	6.04	83	82.62	7.96
4	3.98	0.38	24	23.89	2.30	44	43.80	4.22	64	63.71	6.13	84	83.61	8.05
5	4.98	0.48	25	24.88	2.40	45	44.79	4.31	65	64.70	6.23	85	84.61	8.15
6	5.97	0.58	26	25.88	2.49	46	45.79	4.41	66	65.70	6.33	86	85.60	8.24
7	6.97	0.67	27	26.88	2.59	47	46.78	4.50	67	66.69	6.42	87	86.60	8.34
8	7.96	0.76	28	27.87	2.68	48	47.78	4.60	68	67.69	6.52	88	87.59	8.43
9	8.96	0.86	29	28.87	2.78	49	48.77	4.70	69	68.68	6.61	89	88.59	8.53
10	9.95	0.96	30	29.86	2.88	50	49.77	4.79	70	69.68	6.71	90	89.59	8.63
11	10.95	1.05	31	30.86	2.97	51	50.77	4.89	71	70.67	6.81	91	90.58	8.72
12	11.94	1.15	32	31.85	3.07	52	51.76	4.98	72	71.67	6.90	92	91.58	8.82
13	12.94	1.25	33	32.85	3.16	53	52.76	5.08	73	72.66	7.00	93	92.57	8.91
14	13.94	1.34	34	33.84	3.26	54	53.75	5.18	74	73.66	7.09	94	93.57	9.01
15	14.93	1.44	35	34.84	3.35	55	54.75	5.27	75	74.65	7.19	95	94.56	9.11
16	15.93	1.53	36	35.83	3.45	56	55.74	5.37	76	75.65	7.28	96	95.56	9.20
17	16.92	1.63	37	36.83	3.55	57	56.74	5.46	77	76.65	7.38	97	96.55	9.30
18	17.92	1.73	38	37.83	3.64	58	57.73	5.56	78	77.64	7.48	98	97.55	9.39
19	18.91	1.82	39	38.82	3.74	59	58.73	5.65	79	78.64	7.57	99	98.54	9.49
20	19.91	1.92	40	39.82	3.83	60	59.72	5.75	80	79.63	7.67	100	99.54	9.58
Dist.	Dep.	Lat.												

84½ DEGREES

TRAVERSE TABLE

41

53½ DEGREES

Dist.	Lat.	Dep.												
1	0.99	0.10	21	20.89	2.10	41	40.79	4.11	61	60.69	6.11	81	80.59	8.12
2	1.99	0.20	22	21.89	2.20	42	41.79	4.21	62	61.69	6.21	82	81.59	8.22
3	2.98	0.30	23	22.88	2.30	43	42.78	4.31	63	62.68	6.31	83	82.58	8.32
4	3.98	0.40	24	23.88	2.40	44	43.78	4.41	64	63.68	6.41	84	83.58	8.42
5	4.97	0.50	25	24.87	2.50	45	44.77	4.51	65	64.67	6.51	85	84.57	8.52
6	5.97	0.60	26	25.87	2.60	46	45.77	4.61	66	65.67	6.61	86	85.57	8.62
7	6.96	0.70	27	26.86	2.71	47	46.76	4.71	67	66.66	6.71	87	86.56	8.72
8	7.96	0.80	28	27.86	2.81	48	47.76	4.81	68	67.66	6.81	88	87.56	8.82
9	8.95	0.90	29	28.85	2.91	49	48.75	4.91	69	68.65	6.91	89	88.55	8.92
10	9.95	1.00	30	29.85	3.01	50	49.75	5.01	70	69.65	7.01	90	89.55	9.02
11	10.94	1.10	31	30.84	3.11	51	50.74	5.11	71	70.64	7.11	91	90.54	9.12
12	11.94	1.20	32	31.84	3.21	52	51.74	5.21	72	71.64	7.21	92	91.54	9.22
13	12.93	1.30	33	32.83	3.31	53	52.73	5.31	73	72.63	7.31	93	92.53	9.32
14	13.93	1.40	34	33.83	3.41	54	53.73	5.41	74	73.63	7.41	94	93.53	9.42
15	14.92	1.50	35	34.82	3.51	55	54.72	5.51	75	74.62	7.51	95	94.52	9.52
16	15.92	1.60	36	35.82	3.61	56	55.72	5.61	76	75.62	7.61	96	95.52	9.62
17	16.91	1.70	37	36.81	3.71	57	56.71	5.71	77	76.61	7.71	97	96.51	9.72
18	17.91	1.80	38	37.81	3.81	58	57.71	5.81	78	77.61	7.81	98	97.51	9.82
19	18.90	1.90	39	38.80	3.91	59	58.70	5.91	79	78.60	7.91	99	98.50	9.92
20	19.90	2.00	40	39.80	4.01	60	59.70	6.01	80	79.60	8.02	100	99.50	10.02
Dist.	Dep.	Lat.												

84½ DEGREES

Dist.	Lat.	Dep.												
1	0.99	0.10	21	20.88	2.20	41	40.78	4.29	61	60.67	6.38	81	80.56	8.47
2	1.99	0.21	22	21.88	2.30	42	41.77	4.39	62	61.66	6.48	82	81.55	8.57
3	2.98	0.31	23	22.87	2.40	43	42.76	4.49	63	62.65	6.59	83	82.55	8.68
4	3.98	0.41	24	23.87	2.51	44	43.76	4.60	64	63.65	6.69	84	83.54	8.78
5	4.97	0.52	25	24.86	2.61	45	44.75	4.70	65	64.64	6.79	85	84.53	8.88
6	5.97	0.63	26	25.86	2.72	46	45.75	4.81	66	65.64	6.90	86	85.53	8.99
7	6.96	0.73	27	26.85	2.82	47	46.74	4.91	67	66.63	7.00	87	86.52	9.09
8	7.96	0.84	28	27.85	2.93	48	47.74	5.02	68	67.63	7.11	88	87.52	9.20
9	8.95	0.94	29	28.84	3.03	49	48.73	5.12	69	68.62	7.21	89	88.51	9.30
10	9.95	1.05	30	29.84	3.14	50	49.73	5.23	70	69.62	7.32	90	89.51	9.41
11	10.94	1.15	31	30.83	3.24	51	50.72	5.33	71	70.61	7.42	91	90.50	9.51
12	11.93	1.25	32	31.82	3.34	52	51.72	5.44	72	71.61	7.53	92	91.50	9.62
13	12.93	1.36	33	32.82	3.45	53	52.71	5.54	73	72.60	7.63	93	92.49	9.72
14	13.92	1.46	34	33.81	3.55	54	53.70	5.64	74	73.59	7.74	94	93.49	9.83
15	14.92	1.57	35	34.81	3.66	55	54.70	5.75	75	74.59	7.84	95	94.48	9.93
16	15.91	1.67	36	35.80	3.76	56	55.69	5.85	76	75.58	7.94	96	95.47	10.03
17	16.91	1.78	37	36.80	3.87	57	56.69	5.96	77	76.58	8.05	97	96.47	10.14
18	17.90	1.88	38	37.79	3.97	58	57.68	6.06	78	77.57	8.15	98	97.46	10.24
19	18.90	1.99	39	38.79	4.08	59	58.68	6.17	79	78.57	8.26	99	98.46	10.35
20	19.89	2.09	40	39.78	4.18	60	59.67	6.27	80	79.56	8.36	100	99.45	10.45
Dist.	Dep.	Lat.												

6 DEGREES

TRAVERSE TABLE

6¼ DEGREES

Dist.	Lat.	Dep.												
1	0.99	0.11	21	20.88	2.29	41	40.76	4.46	61	60.64	6.64	81	80.52	8.82
2	1.99	0.22	22	21.87	2.40	42	41.75	4.57	62	61.63	6.75	82	81.51	8.93
3	2.98	0.33	23	22.86	2.50	43	42.74	4.68	63	62.63	6.86	83	82.51	9.04
4	3.98	0.44	24	23.86	2.61	44	43.74	4.79	64	63.62	6.97	84	83.50	9.14
5	4.97	0.54	25	24.85	2.72	45	44.73	4.90	65	64.61	7.08	85	84.50	9.25
6	5.96	0.65	26	25.85	2.83	46	45.73	5.01	66	65.61	7.19	86	85.49	9.36
7	6.96	0.76	27	26.84	2.94	47	46.72	5.12	67	66.60	7.29	87	86.48	9.47
8	7.95	0.87	28	27.83	3.05	48	47.71	5.23	68	67.60	7.40	88	87.48	9.58
9	8.95	0.98	29	28.83	3.16	49	48.71	5.34	69	68.59	7.51	89	88.47	9.69
10	9.94	1.09	30	29.82	3.27	50	49.70	5.44	70	69.58	7.62	90	89.47	9.80
11	10.93	1.20	31	30.82	3.37	51	50.70	5.55	71	70.58	7.73	91	90.46	9.91
12	11.93	1.31	32	31.81	3.48	52	51.69	5.66	72	71.57	7.84	92	91.45	10.02
13	12.92	1.42	33	32.80	3.59	53	52.68	5.77	73	72.57	7.95	93	92.45	10.12
14	13.92	1.52	34	33.80	3.70	54	53.68	5.88	74	73.56	8.06	94	93.44	10.23
15	14.91	1.63	35	34.79	3.81	55	54.67	5.99	75	74.55	8.17	95	94.44	10.34
16	15.90	1.74	36	35.79	3.92	56	55.67	6.10	76	75.55	8.27	96	95.43	10.45
17	16.90	1.85	37	36.78	4.03	57	56.66	6.21	77	76.54	8.38	97	96.42	10.56
18	17.89	1.96	38	37.77	4.14	58	57.66	6.31	78	77.54	8.49	98	97.42	10.67
19	18.89	2.07	39	38.77	4.25	59	58.65	6.42	79	78.53	8.60	99	98.41	10.78
20	19.88	2.18	40	39.76	4.35	60	59.64	6.53	80	79.53	8.71	100	99.41	10.89
Dist.	Dep.	Lat.												

83¾ DEGREES

Dist.	Lat.	Dep.												
1	0.99	0.11	21	20.87	2.38	41	40.74	4.64	61	60.61	6.91	81	80.48	9.17
2	1.99	0.23	22	21.86	2.49	42	41.73	4.76	62	61.60	7.02	82	81.47	9.28
3	2.98	0.34	23	22.85	2.60	43	42.72	4.87	63	62.60	7.13	83	82.47	9.40
4	3.97	0.45	24	23.85	2.72	44	43.72	4.98	64	63.59	7.25	84	83.46	9.51
5	4.97	0.57	25	24.84	2.83	45	44.71	5.09	65	64.58	7.36	85	84.45	9.62
6	5.96	0.68	26	25.83	2.94	46	45.70	5.21	66	65.58	7.47	86	85.45	9.74
7	6.96	0.79	27	26.83	3.06	47	46.70	5.32	67	66.57	7.58	87	86.44	9.85
8	7.95	0.91	28	27.82	3.17	48	47.69	5.43	68	67.56	7.70	88	87.43	9.96
9	8.94	1.02	29	28.81	3.28	49	48.69	5.55	69	68.56	7.81	89	88.43	10.08
10	9.94	1.13	30	29.81	3.40	50	49.68	5.66	70	69.55	7.92	90	89.42	10.19
11	10.93	1.25	31	30.80	3.51	51	50.67	5.77	71	70.54	8.04	91	90.42	10.30
12	11.92	1.36	32	31.79	3.62	52	51.67	5.89	72	71.54	8.15	92	91.41	10.41
13	12.92	1.47	33	32.79	3.74	53	52.66	6.00	73	72.53	8.26	93	92.40	10.53
14	13.91	1.59	34	33.78	3.85	54	53.65	6.11	74	73.52	8.38	94	93.40	10.64
15	14.90	1.70	35	34.78	3.96	55	54.65	6.23	75	74.52	8.49	95	94.39	10.75
16	15.90	1.81	36	35.77	4.08	56	55.64	6.34	76	75.51	8.60	96	95.38	10.87
17	16.89	1.92	37	36.76	4.19	57	56.63	6.45	77	76.51	8.72	97	96.38	10.98
18	17.88	2.04	38	37.76	4.30	58	57.63	6.57	78	77.50	8.83	98	97.37	11.09
19	18.88	2.15	39	38.75	4.41	59	58.62	6.68	79	78.49	8.94	99	98.36	11.21
20	19.87	2.26	40	39.74	4.53	60	59.61	6.79	80	79.49	9.06	100	99.36	11.32
Dist.	Dep.	Lat.												

83½ DEGREES

TRAVERSE TABLE

43

63½ DEGREES

Dist.	Lat.	Dep.												
1	0.99	0.12	21	20.85	2.47	41	40.72	4.82	61	60.58	7.17	81	80.44	9.52
2	1.99	0.24	22	21.85	2.59	42	41.71	4.94	62	61.57	7.29	82	81.43	9.64
3	2.98	0.35	23	22.84	2.70	43	42.70	5.05	63	62.56	7.40	83	82.42	9.76
4	3.97	0.47	24	23.83	2.82	44	43.70	5.17	64	63.56	7.52	84	83.42	9.87
5	4.97	0.59	25	24.83	2.94	45	44.69	5.29	65	64.55	7.64	85	84.41	9.99
6	5.96	0.71	26	25.82	3.06	46	45.68	5.41	66	65.54	7.76	86	85.40	10.11
7	6.95	0.82	27	26.81	3.17	47	46.67	5.52	67	66.54	7.88	87	86.40	10.23
8	7.94	0.94	28	27.81	3.29	48	47.67	5.64	68	67.53	7.99	88	87.39	10.34
9	8.94	1.06	29	28.80	3.41	49	48.66	5.76	69	68.52	8.11	89	88.38	10.46
10	9.93	1.18	30	29.79	3.53	50	49.65	5.88	70	69.51	8.23	90	89.38	10.58
11	10.92	1.29	31	30.79	3.64	51	50.65	5.99	71	70.51	8.35	91	90.37	10.70
12	11.92	1.41	32	31.78	3.76	52	51.64	6.11	72	71.50	8.46	92	91.36	10.81
13	12.91	1.53	33	32.77	3.88	53	52.63	6.23	73	72.49	8.58	93	92.36	10.93
14	13.90	1.65	34	33.76	4.00	54	53.63	6.35	74	73.49	8.70	94	93.35	11.05
15	14.90	1.76	35	34.76	4.11	55	54.62	6.46	75	74.48	8.82	95	94.34	11.17
16	15.89	1.88	36	35.75	4.23	56	55.61	6.58	76	75.47	8.93	96	95.33	11.28
17	16.88	2.00	37	36.75	4.35	57	56.60	6.70	77	76.47	9.05	97	96.33	11.40
18	17.88	2.12	38	37.74	4.47	58	57.60	6.82	78	77.46	9.17	98	97.32	11.52
19	18.87	2.23	39	38.73	4.58	59	58.59	6.93	79	78.45	9.29	99	98.31	11.64
20	19.86	2.35	40	39.72	4.70	60	59.58	7.05	80	79.45	9.40	100	99.31	11.75

Dist.	Dep.	Lat.												
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83½ DEGREES

Dist.	Lat.	Dep.												
1	0.99	0.12	21	20.84	2.56	41	40.70	5.00	61	60.55	7.43	81	80.40	9.87
2	1.99	0.24	22	21.84	2.68	42	41.69	5.12	62	61.54	7.56	82	81.39	9.99
3	2.98	0.37	23	22.83	2.80	43	42.68	5.24	63	62.53	7.68	83	82.38	10.12
4	3.97	0.49	24	23.82	2.92	44	43.67	5.36	64	63.52	7.80	84	83.37	10.24
5	4.96	0.61	25	24.81	3.05	45	44.67	5.48	65	64.52	7.92	85	84.37	10.36
6	5.96	0.73	26	25.81	3.17	46	45.66	5.61	66	65.51	8.04	86	85.36	10.48
7	6.95	0.85	27	26.80	3.29	47	46.65	5.73	67	66.50	8.17	87	86.35	10.60
8	7.94	0.97	28	27.79	3.41	48	47.64	5.85	68	67.49	8.29	88	87.34	10.72
9	8.93	1.09	29	28.78	3.53	49	48.63	5.97	69	68.49	8.41	89	88.34	10.85
10	9.93	1.22	30	29.78	3.66	50	49.63	6.09	70	69.48	8.53	90	89.33	10.97
11	10.92	1.34	31	30.77	3.78	51	50.62	6.22	71	70.47	8.65	91	90.32	11.09
12	11.91	1.46	32	31.76	3.90	52	51.61	6.34	72	71.46	8.77	92	91.31	11.21
13	12.90	1.58	33	32.75	4.02	53	52.60	6.46	73	72.46	8.90	93	92.31	11.33
14	13.90	1.71	34	33.75	4.14	54	53.60	6.58	74	73.45	9.02	94	93.30	11.46
15	14.89	1.83	35	34.74	4.27	55	54.59	6.70	75	74.44	9.14	95	94.29	11.58
16	15.88	1.95	36	35.73	4.39	56	55.58	6.82	76	75.43	9.26	96	95.28	11.70
17	16.87	2.07	37	36.72	4.51	57	56.58	6.95	77	76.43	9.38	97	96.28	11.82
18	17.87	2.19	38	37.72	4.63	58	57.57	7.07	78	77.42	9.51	98	97.27	11.94
19	18.86	2.32	39	38.71	4.75	59	58.56	7.19	79	78.41	9.63	99	98.26	12.07
20	19.85	2.44	40	39.70	4.87	60	59.55	7.31	80	79.40	9.75	100	99.25	12.19

Dist.	Dep.	Lat.												
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83 DEGREES

TRAVERSE TABLE

7¼ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.									
1	0.99	0.13	21	20.83	2.65	41	40.67	5.17	61	60.51	7.70	81	80.35	10.22
2	1.98	0.25	22	21.82	2.78	42	41.66	5.30	62	61.59	7.82	82	81.34	10.35
3	2.98	0.38	23	22.82	2.90	43	42.66	5.43	63	62.50	7.95	83	82.34	10.47
4	3.97	0.50	24	23.81	3.03	44	43.65	5.55	64	63.49	8.08	84	83.33	10.69
5	4.96	0.63	25	24.80	3.15	45	44.64	5.68	65	64.48	8.20	85	84.32	10.73
6	5.95	0.76	26	25.79	3.28	46	45.63	5.81	66	65.47	8.33	86	85.31	10.85
7	6.94	0.88	27	26.78	3.41	47	46.62	5.93	67	66.46	8.46	87	86.30	10.98
8	7.94	1.01	28	27.78	3.53	48	47.62	6.06	68	67.45	8.58	88	87.30	11.11
9	8.93	1.14	29	28.77	3.66	49	48.61	6.18	69	68.45	8.71	89	88.29	11.23
10	9.92	1.26	30	29.76	3.79	50	49.60	6.31	70	69.44	8.83	90	89.28	11.35
11	10.91	1.39	31	30.75	3.91	51	50.59	6.44	71	70.43	8.93	91	90.27	11.48
12	11.90	1.51	32	31.74	4.04	52	51.58	6.56	72	71.42	9.09	92	91.26	11.61
13	12.90	1.64	33	32.74	4.16	53	52.58	6.69	73	72.42	9.21	93	92.26	11.74
14	13.89	1.77	34	33.73	4.29	54	53.57	6.81	74	73.41	9.34	94	93.25	11.86
15	14.88	1.89	35	34.72	4.42	55	54.56	6.94	75	74.40	9.46	95	94.24	11.99
16	15.87	2.02	36	35.71	4.54	56	55.55	7.07	76	75.39	9.59	96	95.23	12.12
17	16.86	2.15	37	36.70	4.67	57	56.54	7.19	77	76.38	9.72	97	96.22	12.24
18	17.85	2.27	38	37.70	4.80	58	57.54	7.32	78	77.38	9.84	98	97.22	12.37
19	18.85	2.40	39	38.69	4.92	59	58.53	7.45	79	78.37	9.97	99	98.21	12.49
20	19.84	2.52	40	39.68	5.05	60	59.52	7.57	80	79.36	10.10	100	99.20	12.62
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.									

82¾ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.									
1	0.99	0.13	21	20.82	2.74	41	40.65	5.35	61	60.48	7.96	81	80.31	10.57
2	1.98	0.26	22	21.81	2.87	42	41.64	5.48	62	61.47	8.09	82	81.30	10.70
3	2.97	0.39	23	22.80	3.00	43	42.63	5.61	63	62.46	8.22	83	82.29	10.83
4	3.97	0.52	24	23.79	3.13	44	43.62	5.74	64	63.45	8.35	84	83.28	10.96
5	4.96	0.65	25	24.79	3.26	45	44.62	5.87	65	64.44	8.48	85	84.27	11.09
6	5.95	0.78	26	25.78	3.39	46	45.61	6.00	66	65.44	8.61	86	85.26	11.23
7	6.94	0.91	27	26.77	3.52	47	46.60	6.13	67	66.43	8.75	87	86.26	11.36
8	7.93	1.04	28	27.76	3.65	48	47.59	6.27	68	67.42	8.88	88	87.25	11.49
9	8.92	1.17	29	28.75	3.79	49	48.58	6.40	69	68.41	9.01	89	88.24	11.62
10	9.91	1.31	30	29.74	3.92	50	49.57	6.53	70	69.40	9.14	90	89.23	11.75
11	10.91	1.44	31	30.73	4.05	51	50.56	6.66	71	70.39	9.27	91	90.22	11.88
12	11.90	1.57	32	31.73	4.18	52	51.56	6.79	72	71.38	9.40	92	91.21	12.01
13	12.89	1.70	33	32.72	4.31	53	52.55	6.92	73	72.38	9.53	93	92.20	12.14
14	13.88	1.83	34	33.71	4.44	54	53.54	7.05	74	73.37	9.66	94	93.20	12.27
15	14.87	1.96	35	34.70	4.57	55	54.53	7.18	75	74.36	9.79	95	94.19	12.40
16	15.86	2.09	36	35.69	4.70	56	55.52	7.31	76	75.35	9.92	96	95.18	12.53
17	16.85	2.22	37	36.68	4.83	57	56.51	7.44	77	76.34	10.05	97	96.17	12.66
18	17.85	2.35	38	37.67	4.96	58	57.50	7.57	78	77.33	10.18	98	97.16	12.79
19	18.84	2.48	39	38.67	5.09	59	58.50	7.70	79	78.32	10.31	99	98.15	12.92
20	19.83	2.61	40	39.66	5.22	60	59.49	7.83	80	79.32	10.44	100	99.14	13.05
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.									

82½ DEGREES

73½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.									
1	0.99	0.13	21	20.81	2.83	41	40.63	5.53	61	60.44	8.23	81	80.26	10.92
2	1.98	0.27	22	21.80	2.97	42	41.62	5.66	62	61.43	8.36	82	81.25	11.06
3	2.97	0.40	23	22.79	3.10	43	42.61	5.80	63	62.42	8.50	83	82.24	11.19
4	3.96	0.54	24	23.78	3.24	44	43.60	5.93	64	63.42	8.63	84	83.23	11.33
5	4.95	0.67	25	24.77	3.37	45	44.59	6.07	65	64.41	8.77	85	84.22	11.46
6	5.95	0.81	26	25.76	3.51	46	45.58	6.20	66	65.40	8.90	86	85.21	11.60
7	6.94	0.94	27	26.75	3.64	47	46.57	6.34	67	66.39	9.04	87	86.21	11.73
8	7.93	1.08	28	27.74	3.78	48	47.56	6.47	68	67.38	9.17	88	87.20	11.87
9	8.92	1.21	29	28.74	3.91	49	48.55	6.61	69	68.37	9.30	89	88.19	12.00
10	9.91	1.35	30	29.73	4.05	50	49.54	6.74	70	69.36	9.44	90	89.18	12.14
11	10.90	1.48	31	30.72	4.18	51	50.53	6.88	71	70.35	9.57	91	90.17	12.27
12	11.89	1.62	32	31.71	4.32	52	51.53	7.01	72	71.34	9.71	92	91.16	12.41
13	12.88	1.75	33	32.70	4.45	53	52.52	7.15	73	72.33	9.84	93	92.15	12.54
14	13.87	1.89	34	33.69	4.58	54	53.51	7.28	74	73.32	9.98	94	93.14	12.68
15	14.86	2.02	35	34.68	4.72	55	54.50	7.42	75	74.31	10.11	95	94.13	12.81
16	15.85	2.16	36	35.67	4.85	56	55.49	7.55	76	75.31	10.25	96	95.12	12.95
17	16.84	2.29	37	36.66	4.99	57	56.48	7.69	77	76.30	10.38	97	96.11	13.08
18	17.84	2.43	38	37.65	5.12	58	57.47	7.82	78	77.29	10.52	98	97.10	13.22
19	18.83	2.56	39	38.64	5.26	59	58.46	7.96	79	78.28	10.65	99	98.10	13.35
20	19.82	2.70	40	39.63	5.39	60	59.45	8.09	80	79.27	10.79	100	99.09	13.49
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.									

82½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.									
1	0.99	0.14	21	20.80	2.92	41	40.60	5.71	61	60.41	8.49	81	80.21	11.27
2	1.98	0.28	22	21.79	3.06	42	41.59	5.85	62	61.40	8.63	82	81.20	11.41
3	2.97	0.42	23	22.78	3.20	43	42.58	5.98	63	62.39	8.77	83	82.19	11.55
4	3.96	0.56	24	23.77	3.34	44	43.57	6.12	64	63.38	8.91	84	83.18	11.69
5	4.95	0.70	25	24.76	3.48	45	44.56	6.26	65	64.37	9.05	85	84.17	11.83
6	5.94	0.84	26	25.75	3.62	46	45.55	6.40	66	65.36	9.19	86	85.16	11.97
7	6.93	0.97	27	26.74	3.76	47	46.54	6.54	67	66.35	9.32	87	85.15	12.11
8	7.92	1.11	28	27.73	3.90	48	47.53	6.68	68	67.34	9.46	88	87.14	12.25
9	8.91	1.25	29	28.72	4.04	49	48.52	6.82	69	68.33	9.60	89	88.13	12.39
10	9.90	1.39	30	29.71	4.18	50	49.51	6.96	70	69.32	9.74	90	89.12	12.53
11	10.89	1.53	31	30.70	4.31	51	50.50	7.10	71	70.31	9.88	91	90.11	12.66
12	11.88	1.67	32	31.69	4.45	52	51.49	7.24	72	71.30	10.02	92	91.10	12.80
13	12.87	1.81	33	32.68	4.59	53	52.48	7.38	73	72.29	10.16	93	92.09	12.94
14	13.86	1.95	34	33.67	4.73	54	53.47	7.52	74	73.28	10.30	94	93.09	13.08
15	14.85	2.09	35	34.66	4.87	55	54.46	7.65	75	74.27	10.44	95	94.08	13.22
16	15.84	2.23	36	35.65	5.01	56	55.46	7.79	76	75.26	10.58	96	95.07	13.36
17	16.83	2.37	37	36.64	5.15	57	56.45	7.93	77	76.25	10.72	97	96.06	13.50
18	17.82	2.51	38	37.63	5.29	58	57.44	8.07	78	77.24	10.86	98	97.05	13.64
19	18.82	2.64	39	38.62	5.43	59	58.43	8.21	79	78.23	10.99	99	98.04	13.78
20	19.81	2.78	40	39.61	5.57	60	59.42	8.35	80	79.22	11.13	100	99.03	13.92
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.									

82 DEGREES

TRAVERSE TABLE

8½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.									
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.									
1	0.99	0.14	21	20.78	3.01	41	40.58	5.88	61	60.37	8.75	81	80.16	11.62
2	1.98	0.29	22	21.77	3.16	42	41.57	6.03	62	61.36	8.90	82	81.15	11.77
3	2.97	0.43	23	22.76	3.30	43	42.56	6.17	63	62.35	9.04	83	82.14	11.91
4	3.96	0.57	24	23.75	3.44	44	43.54	6.31	64	63.34	9.18	84	83.13	12.05
5	4.95	0.72	25	24.74	3.59	45	44.53	6.46	65	64.33	9.33	85	84.12	12.20
6	5.94	0.86	26	25.73	3.73	46	45.52	6.60	66	65.32	9.47	86	85.11	12.34
7	6.93	1.00	27	26.72	3.87	47	46.51	6.74	67	66.31	9.61	87	86.10	12.48
8	7.92	1.15	28	27.71	4.02	48	47.50	6.89	68	67.30	9.76	88	87.09	12.63
9	8.91	1.29	29	28.70	4.16	49	48.49	7.03	69	68.29	9.90	89	88.08	12.77
10	9.90	1.43	30	29.69	4.30	50	49.48	7.17	70	69.28	10.04	90	89.07	12.91
11	10.89	1.58	31	30.68	4.45	51	50.47	7.32	71	70.27	10.19	91	90.06	13.06
12	11.88	1.72	32	31.67	4.59	52	51.46	7.46	72	71.25	10.33	92	91.05	13.20
13	12.87	1.87	33	32.66	4.74	53	52.45	7.61	73	72.24	10.47	93	92.04	13.34
14	13.86	2.01	34	33.65	4.88	54	53.44	7.75	74	73.23	10.62	94	93.03	13.49
15	14.85	2.15	35	34.64	5.02	55	54.43	7.89	75	74.22	10.76	95	94.02	13.63
16	15.84	2.30	36	35.63	5.17	56	55.42	8.04	76	75.21	10.91	96	95.01	13.78
17	16.83	2.44	37	36.62	5.31	57	56.41	8.18	77	76.20	11.05	97	96.00	13.92
18	17.81	2.58	38	37.61	5.45	58	57.40	8.32	78	77.19	11.19	98	96.99	14.06
19	18.80	2.73	39	38.60	5.60	59	58.39	8.47	79	78.18	11.34	99	97.98	14.21
20	19.79	2.87	40	39.59	5.74	60	59.38	8.61	80	79.17	11.48	100	98.97	14.35

8½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.									
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.									
1	0.99	0.15	21	20.77	3.10	41	40.55	6.06	61	60.33	9.02	81	80.11	11.97
2	1.98	0.30	22	21.76	3.25	42	41.54	6.21	62	61.32	9.16	82	81.10	12.12
3	2.97	0.44	23	22.75	3.40	43	42.53	6.36	63	62.31	9.31	83	82.09	12.27
4	3.96	0.59	24	23.74	3.55	44	43.52	6.50	64	63.30	9.46	84	83.08	12.42
5	4.95	0.74	25	24.73	3.70	45	44.51	6.65	65	64.29	9.61	85	84.07	12.56
6	5.93	0.89	26	25.71	3.84	46	45.49	6.80	66	65.28	9.76	86	85.06	12.71
7	6.92	1.03	27	26.70	3.99	47	46.48	6.95	67	66.26	9.90	87	86.04	12.85
8	7.91	1.18	28	27.69	4.14	48	47.47	7.09	68	67.25	10.05	88	87.03	13.01
9	8.90	1.33	29	28.68	4.29	49	48.46	7.24	69	68.24	10.20	89	88.02	13.16
10	9.89	1.48	30	29.67	4.43	50	49.45	7.39	70	69.23	10.35	90	89.01	13.30
11	10.88	1.63	31	30.66	4.58	51	50.44	7.54	71	70.22	10.49	91	90.00	13.45
12	11.87	1.77	32	31.65	4.73	52	51.43	7.69	72	71.21	10.64	92	90.99	13.60
13	12.86	1.92	33	32.64	4.88	53	52.42	7.83	73	72.20	10.79	93	91.98	13.75
14	13.85	2.07	34	33.63	5.03	54	53.41	7.98	74	73.19	10.94	94	92.97	13.89
15	14.84	2.22	35	34.62	5.17	55	54.40	8.13	75	74.18	11.09	95	93.96	14.04
16	15.82	2.36	36	35.60	5.32	56	55.38	8.28	76	75.17	11.23	96	94.95	14.19
17	16.81	2.51	37	36.59	5.47	57	56.37	8.43	77	76.15	11.38	97	95.93	14.34
18	17.80	2.66	38	37.58	5.62	58	57.36	8.57	78	77.14	11.53	98	96.92	14.49
19	18.79	2.81	39	38.57	5.76	59	58.35	8.72	79	78.13	11.68	99	97.91	14.63
20	19.78	2.96	40	39.56	5.91	60	59.34	8.87	80	79.12	11.82	100	98.90	14.78

8½ DEGREES

TRAVERSE TABLE

47

83/4 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.									
1	0.99	0.15	21	20.76	3.19	41	40.52	6.24	61	60.29	9.28	81	80.06	12.32
2	1.98	0.30	22	21.74	3.35	42	41.51	6.39	62	61.28	9.43	82	81.05	12.47
3	2.97	0.46	23	22.73	3.50	43	42.50	6.54	63	62.27	9.58	83	82.03	12.63
4	3.95	0.61	24	23.72	3.65	44	43.49	6.69	64	63.26	9.74	84	83.02	12.78
5	4.94	0.76	25	24.71	3.80	45	44.48	6.85	65	64.24	9.89	85	84.01	12.93
6	5.93	0.91	26	25.70	3.96	46	45.46	7.00	66	65.23	10.04	86	85.00	13.08
7	6.92	1.06	27	26.69	4.11	47	46.45	7.15	67	66.22	10.19	87	85.99	13.23
8	7.91	1.22	28	27.67	4.26	48	47.44	7.30	68	67.21	10.34	88	86.98	13.39
9	8.90	1.37	29	28.66	4.41	49	48.43	7.45	69	68.20	10.50	89	87.96	13.54
10	9.88	1.52	30	29.65	4.56	50	49.42	7.61	70	69.19	10.65	90	88.95	13.69
11	10.87	1.67	31	30.64	4.72	51	50.41	7.76	71	70.17	10.80	91	89.94	13.84
12	11.86	1.83	32	31.63	4.87	52	51.39	7.91	72	71.16	10.95	92	90.93	14.00
13	12.85	1.98	33	32.62	5.02	53	52.38	8.06	73	72.15	11.10	93	91.92	14.15
14	13.84	2.13	34	33.60	5.17	54	53.37	8.21	74	73.14	11.26	94	92.91	14.30
15	14.83	2.28	35	34.59	5.32	55	54.36	8.37	75	74.13	11.41	95	93.89	14.45
16	15.81	2.43	36	35.58	5.48	56	55.35	8.52	76	75.12	11.56	96	94.88	14.60
17	16.80	2.59	37	36.57	5.63	57	56.34	8.67	77	76.10	11.71	97	95.87	14.76
18	17.79	2.74	38	37.56	5.78	58	57.32	8.82	78	77.09	11.87	98	96.86	14.91
19	18.78	2.89	39	38.55	5.93	59	58.31	8.98	79	78.08	12.02	99	97.85	15.06
20	19.77	3.04	40	39.53	6.08	60	59.30	9.13	80	79.07	12.17	100	98.84	15.21

Dist.	Dep.	Lat.												
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81 1/4 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.									
1	0.99	0.16	21	20.74	3.29	41	40.50	6.41	61	60.25	9.54	81	80.00	12.67
2	1.98	0.31	22	21.73	3.44	42	41.48	6.57	62	61.24	9.70	82	80.99	12.83
3	2.96	0.47	23	22.72	3.60	43	42.47	6.73	63	62.22	9.86	83	81.98	12.98
4	3.95	0.63	24	23.70	3.75	44	43.46	6.88	64	63.21	10.01	84	82.97	13.14
5	4.94	0.78	25	24.69	3.91	45	44.45	7.04	65	64.20	10.17	85	83.95	13.30
6	5.93	0.94	26	25.68	4.07	46	45.43	7.20	66	65.19	10.32	86	84.94	13.45
7	6.91	1.10	27	26.67	4.22	47	46.42	7.35	67	66.18	10.48	87	85.93	13.61
8	7.90	1.25	28	27.66	4.38	48	47.41	7.51	68	67.16	10.64	88	86.92	13.77
9	8.89	1.41	29	28.64	4.54	49	48.40	7.67	69	68.15	10.79	89	87.90	13.92
10	9.88	1.56	30	29.63	4.69	50	49.38	7.82	70	69.14	10.95	90	88.89	14.08
11	10.86	1.72	31	30.62	4.85	51	50.37	7.98	71	70.13	11.11	91	89.88	14.24
12	11.85	1.88	32	31.61	5.01	52	51.36	8.13	72	71.11	11.26	92	90.87	14.39
13	12.84	2.03	33	32.59	5.16	53	52.35	8.29	73	72.10	11.42	93	91.86	14.55
14	13.83	2.19	34	33.58	5.32	54	53.34	8.45	74	73.09	11.58	94	92.84	14.70
15	14.82	2.35	35	34.57	5.48	55	54.32	8.60	75	74.08	11.73	95	93.83	14.86
16	15.80	2.50	36	35.56	5.63	56	55.31	8.76	76	75.06	11.89	96	94.82	15.02
17	16.79	2.66	37	36.54	5.79	57	56.30	8.92	77	76.05	12.05	97	95.81	15.17
18	17.78	2.82	38	37.53	5.94	58	57.29	9.07	78	77.04	12.20	98	96.79	15.33
19	18.77	2.97	39	38.52	6.10	59	58.27	9.23	79	78.03	12.36	99	97.78	15.49
20	19.75	3.13	40	39.51	6.26	60	59.26	9.39	80	79.02	12.51	100	98.77	15.64

Dist.	Dep.	Lat.												
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81 DEGREES

TRAVERSE TABLE

9 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.									
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.									
1	0.99	0.16	21	20.73	3.38	41	40.47	6.59	61	60.21	9.81	81	79.95	13.02
2	1.97	0.32	22	21.71	3.54	42	41.45	6.75	62	61.19	9.97	82	80.93	13.18
3	2.96	0.48	23	22.70	3.70	43	42.44	6.91	63	62.18	10.13	83	81.92	13.34
4	3.95	0.64	24	23.69	3.86	44	43.43	7.07	64	63.17	10.29	84	82.91	13.50
5	4.93	0.80	25	24.67	4.02	45	44.41	7.23	65	64.15	10.45	85	83.89	13.66
6	5.92	0.96	26	25.66	4.18	46	45.40	7.39	66	65.14	10.61	86	84.88	13.82
7	6.91	1.13	27	26.65	4.34	47	46.39	7.55	67	63.13	10.77	87	85.87	13.98
8	7.90	1.29	28	27.64	4.50	48	47.38	7.72	68	67.12	10.93	88	86.86	14.15
9	8.88	1.45	29	28.62	4.66	49	48.36	7.88	69	68.10	11.09	89	87.84	14.31
10	9.87	1.61	30	29.61	4.82	50	49.35	8.04	70	69.09	11.25	90	88.83	14.47
11	10.86	1.77	31	30.60	4.98	51	50.34	8.20	71	70.08	11.41	91	89.82	14.63
12	11.84	1.93	32	31.58	5.14	52	51.32	8.36	72	71.06	11.57	92	90.80	14.79
13	12.83	2.09	33	32.57	5.30	53	52.31	8.52	73	72.05	11.73	93	91.79	14.95
14	13.82	2.25	34	33.56	5.47	54	53.30	8.68	74	73.04	11.89	94	92.78	15.11
15	14.80	2.41	35	34.54	5.63	55	54.28	8.84	75	74.02	12.06	95	93.76	15.27
16	15.79	2.57	36	35.53	5.79	56	55.27	9.00	76	75.01	12.22	96	94.75	15.43
17	16.78	2.73	37	36.52	5.95	57	56.26	9.16	77	76.00	12.38	97	95.74	15.59
18	17.77	2.89	38	37.51	6.11	58	57.25	9.32	78	76.99	12.54	98	96.73	15.75
19	18.75	3.05	39	38.49	6.27	59	58.23	9.48	79	77.97	12.79	99	97.71	15.91
20	19.74	3.21	40	39.48	6.43	60	59.22	9.64	80	78.96	12.86	100	98.70	16.07

80 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.									
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.									
1	0.99	0.17	21	20.71	3.47	41	40.44	6.77	61	60.16	10.07	81	79.89	13.37
2	1.97	0.33	22	21.70	3.63	42	41.42	6.92	62	61.15	10.23	82	80.88	13.53
3	2.96	0.50	23	22.68	3.89	43	42.41	7.10	63	62.14	10.40	83	81.86	13.70
4	3.95	0.66	24	23.67	3.96	44	43.40	7.26	64	63.12	10.56	84	82.85	13.86
5	4.93	0.83	25	24.66	4.13	45	44.38	7.43	65	64.11	10.73	85	83.83	14.03
6	5.92	0.99	26	25.64	4.29	46	45.37	7.59	66	65.09	10.89	86	84.82	14.19
7	6.90	1.16	27	26.63	4.46	47	46.36	7.76	67	66.08	11.06	87	85.81	14.36
8	7.89	1.32	28	27.62	4.62	48	47.34	7.92	68	67.07	11.22	88	86.79	14.52
9	8.88	1.49	29	28.60	4.79	49	48.33	8.09	69	68.05	11.39	89	87.78	14.69
10	9.86	1.65	30	29.59	4.95	50	49.32	8.25	70	69.04	11.55	90	88.77	14.85
11	10.85	1.82	31	30.57	5.12	51	50.30	8.42	71	70.03	11.72	91	89.75	15.02
12	11.84	1.98	32	31.56	5.28	52	51.29	8.58	72	71.01	11.88	92	90.74	15.18
13	12.82	2.15	33	32.55	5.45	53	52.27	8.75	73	72.00	12.05	93	91.72	15.35
14	13.81	2.31	34	33.53	5.61	54	53.26	8.91	74	72.99	12.21	94	92.71	15.51
15	14.79	2.48	35	34.52	5.78	55	54.25	9.08	75	73.97	12.38	95	93.70	15.68
16	15.78	2.64	36	35.51	5.94	56	55.23	9.24	76	74.96	12.54	96	94.68	15.84
17	16.77	2.81	37	36.49	6.11	57	56.22	9.41	77	75.94	12.71	97	95.67	16.01
18	17.75	2.97	38	37.48	6.27	58	57.20	9.57	78	76.93	12.87	98	96.66	16.17
19	18.74	3.14	39	38.47	6.44	59	58.19	9.74	79	77.92	13.04	99	97.64	16.34
20	19.73	3.30	40	39.45	6.60	60	59.18	9.90	80	78.90	13.20	100	98.63	16.50

80 $\frac{1}{2}$ DEGREES

TRAVERSE TABLE

49

93 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.99	0.17	21	20.70	3.56	41	40.41	6.94	61	60.12	10.33	81	79.83	13.72
2	1.97	0.34	22	21.68	3.73	42	41.39	7.11	62	61.10	10.50	82	80.82	13.89
3	2.96	0.51	23	22.67	3.90	43	42.38	7.28	63	62.09	10.67	83	81.80	14.06
4	3.94	0.68	24	23.65	4.06	44	43.36	7.45	64	63.08	10.84	84	82.79	14.23
5	4.93	0.85	25	24.64	4.23	45	44.35	7.62	65	64.06	11.01	85	83.77	14.39
6	5.91	1.02	26	25.62	4.40	46	45.34	7.79	66	65.05	11.18	86	84.76	14.56
7	6.90	1.19	27	26.61	4.57	47	46.32	7.96	67	66.03	11.35	87	85.74	14.73
8	7.88	1.35	28	27.60	4.74	48	47.31	8.13	68	67.02	11.52	88	86.73	14.90
9	8.87	1.52	29	28.58	4.91	49	48.29	8.30	69	68.00	11.69	89	87.71	15.07
10	9.86	1.69	30	29.57	5.08	50	49.28	8.47	70	68.99	11.85	90	88.70	15.24
11	10.84	1.86	31	30.55	5.25	51	50.26	8.64	71	69.97	12.02	91	89.69	15.41
12	11.83	2.03	32	31.54	5.42	52	51.25	8.81	72	70.96	12.19	92	90.67	15.58
13	12.81	2.20	33	32.52	5.59	53	52.23	8.98	73	71.95	12.36	93	91.66	15.75
14	13.80	2.37	34	33.51	5.76	54	53.22	9.14	74	72.93	12.53	94	92.64	15.92
15	14.78	2.54	35	34.49	5.93	55	54.21	9.31	75	73.92	12.70	95	93.63	16.09
16	15.77	2.71	36	35.48	6.10	56	55.19	9.48	76	74.90	12.87	96	94.61	16.26
17	16.75	2.88	37	36.47	6.27	57	56.18	9.65	77	75.89	13.04	97	95.60	16.43
18	17.74	3.05	38	37.45	6.44	58	57.16	9.82	78	76.87	13.21	98	96.58	16.60
19	18.73	3.22	39	38.44	6.60	59	58.15	9.99	79	77.86	13.38	99	97.57	16.77
20	19.71	3.39	40	39.42	6.77	60	59.13	10.16	80	78.84	13.55	100	98.56	16.93

Dist.	Dep.	Lat.												
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80 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.98	0.17	21	20.68	3.65	41	40.38	7.12	61	60.07	10.59	81	79.77	14.07
2	1.97	0.35	22	21.67	3.82	42	41.36	7.29	62	61.03	10.77	82	80.75	14.24
3	2.95	0.52	23	22.65	3.99	43	42.35	7.47	63	62.04	10.94	83	81.74	14.41
4	3.94	0.69	24	23.64	4.17	44	43.33	7.64	64	63.03	11.11	84	82.72	14.59
5	4.92	0.87	25	24.62	4.34	45	44.32	7.81	65	64.01	11.29	85	83.71	14.76
6	5.91	1.04	26	25.61	4.51	46	45.30	7.99	66	65.00	11.46	86	84.69	14.93
7	6.89	1.22	27	26.59	4.69	47	46.29	8.16	67	65.98	11.63	87	85.68	15.11
8	7.88	1.39	28	27.57	4.86	48	47.27	8.34	68	66.97	11.81	88	86.66	15.28
9	8.86	1.56	29	28.56	5.04	49	48.26	8.51	69	67.95	11.98	89	87.65	15.45
10	9.85	1.74	30	29.54	5.21	50	49.24	8.68	70	68.94	12.16	90	88.63	15.63
11	10.83	1.91	31	30.53	5.38	51	50.23	8.86	71	69.92	12.33	91	89.62	15.80
12	11.82	2.08	32	31.51	5.56	52	51.21	9.03	72	70.91	12.50	92	90.60	15.98
13	12.80	2.26	33	32.50	5.73	53	52.19	9.20	73	71.89	12.68	93	91.59	16.15
14	13.79	2.43	34	33.48	5.90	54	53.18	9.38	74	72.88	12.85	94	92.57	16.32
15	14.77	2.60	35	34.47	6.08	55	54.16	9.55	75	73.86	13.02	95	93.56	16.50
16	15.76	2.78	36	35.45	6.25	56	55.15	9.72	76	74.85	13.20	96	94.54	16.67
17	16.74	2.95	37	36.44	6.42	57	56.13	9.90	77	75.83	13.37	97	95.53	16.84
18	17.73	3.13	38	37.42	6.60	58	57.12	10.07	78	76.82	13.54	98	96.51	17.02
19	18.71	3.30	39	38.41	6.77	59	58.10	10.25	79	77.80	13.72	99	97.50	17.19
20	19.70	3.47	40	39.39	6.95	60	59.09	10.42	80	78.78	13.89	100	98.48	17.36

Dist.	Dep.	Lat.												
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80 DEGREES

TRAVERSE TABLE

10 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.98	0.18	21	20.66	3.74	41	40.35	7.30	61	60.03	10.85	81	79.71	14.41
2	1.97	0.36	22	21.65	3.91	42	41.33	7.47	62	61.01	11.03	82	80.69	14.59
3	2.95	0.53	23	22.63	4.09	43	42.31	7.65	63	61.99	11.21	83	81.68	14.77
4	3.94	0.71	24	23.62	4.27	44	43.30	7.83	64	62.98	11.39	84	82.66	14.95
5	4.92	0.89	25	24.60	4.45	45	44.28	8.01	65	63.96	11.57	85	83.64	15.13
6	5.90	1.07	26	25.59	4.63	46	45.27	8.19	66	64.95	11.74	86	84.63	15.30
7	6.89	1.25	27	26.57	4.80	47	46.25	8.36	67	65.93	11.92	87	85.61	15.48
8	7.87	1.42	28	27.55	4.98	48	47.23	8.54	68	66.91	12.10	88	86.60	15.66
9	8.86	1.60	29	28.54	5.16	49	48.22	8.72	69	67.90	12.28	89	87.58	15.84
10	9.84	1.78	30	29.52	5.34	50	49.20	8.90	70	68.88	12.46	90	88.56	16.01
11	10.82	1.96	31	30.51	5.52	51	50.19	9.08	71	69.87	12.63	91	89.55	16.19
12	11.81	2.14	32	31.49	5.69	52	51.17	9.25	72	70.85	12.81	92	90.53	16.37
13	12.79	2.31	33	32.47	5.87	53	52.15	9.43	73	71.83	12.99	93	91.52	16.55
14	13.78	2.49	34	33.46	6.05	54	53.14	9.61	74	72.82	13.17	94	92.50	16.73
15	14.76	2.67	35	34.44	6.23	55	54.12	9.79	75	73.80	13.35	95	93.48	16.90
16	15.74	2.85	36	35.43	6.41	56	55.11	9.96	76	74.79	13.52	96	94.47	17.08
17	16.73	3.03	37	36.41	6.58	57	56.09	10.14	77	75.77	13.70	97	95.45	17.26
18	17.71	3.20	38	37.39	6.76	58	57.07	10.32	78	76.76	13.88	98	96.44	17.44
19	18.70	3.38	39	38.38	6.94	59	58.06	10.50	79	77.74	14.06	99	97.42	17.62
20	19.68	3.56	40	39.36	7.12	60	59.04	10.68	80	78.72	14.24	100	98.40	17.79
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

79 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.98	0.18	21	20.65	3.83	41	40.31	7.47	61	59.93	11.12	81	79.64	14.76
2	1.97	0.36	22	21.63	4.01	42	41.30	7.65	62	60.96	11.30	82	80.63	14.94
3	2.95	0.53	23	22.61	4.19	43	42.28	7.84	63	61.95	11.48	83	81.61	15.13
4	3.93	0.71	24	23.60	4.37	44	43.26	8.02	64	62.93	11.66	84	82.59	15.31
5	4.92	0.89	25	24.58	4.56	45	44.25	8.20	65	63.91	11.85	85	83.58	15.49
6	5.90	1.07	26	25.56	4.74	46	45.23	8.38	66	64.89	12.03	86	84.56	15.67
7	6.88	1.25	27	26.55	4.92	47	46.21	8.57	67	65.88	12.21	87	85.54	15.85
8	7.87	1.42	28	27.53	5.10	48	47.20	8.75	68	66.86	12.39	88	86.53	16.04
9	8.85	1.60	29	28.51	5.28	49	48.18	8.93	69	67.84	12.57	89	87.51	16.22
10	9.83	1.78	30	29.50	5.47	50	49.16	9.11	70	68.83	12.76	90	88.49	16.40
11	10.82	2.00	31	30.48	5.65	51	50.15	9.29	71	69.81	12.94	91	89.48	16.58
12	11.80	2.19	32	31.46	5.83	52	51.13	9.48	72	70.79	13.12	92	90.46	16.77
13	12.78	2.37	33	32.45	6.01	53	52.11	9.66	73	71.78	13.30	93	91.44	16.95
14	13.77	2.55	34	33.43	6.20	54	53.10	9.84	74	72.76	13.49	94	92.43	17.13
15	14.75	2.73	35	34.41	6.38	55	54.08	10.02	75	73.74	13.67	95	93.41	17.31
16	15.73	2.92	36	35.40	6.56	56	55.06	10.21	76	74.73	13.85	96	94.39	17.49
17	16.72	3.10	37	36.38	6.74	57	56.05	10.39	77	75.71	14.03	97	95.38	17.68
18	17.70	3.28	38	37.36	6.92	58	57.03	10.57	78	76.69	14.21	98	96.36	17.86
19	18.68	3.46	39	38.35	7.11	59	58.01	10.75	79	77.68	14.40	99	97.34	18.04
20	19.67	3.64	40	39.33	7.29	60	59.00	10.93	80	78.66	14.58	100	98.33	18.22
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

79 $\frac{1}{2}$ DEGREES

103 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.98	0.19	21	20.63	3.92	41	40.28	7.65	61	59.93	11.38	81	79.58	15.11
2	1.96	0.37	22	21.61	4.10	42	41.26	7.83	62	60.91	11.56	82	80.56	15.29
3	2.95	0.56	23	22.60	4.29	43	42.25	8.02	63	61.89	11.75	83	81.54	15.48
4	3.93	0.75	24	23.58	4.48	44	43.23	8.21	64	62.88	11.94	84	82.53	15.67
5	4.91	0.93	25	24.56	4.66	45	44.21	8.39	65	63.86	12.12	85	83.51	15.85
6	5.89	1.12	26	25.54	4.85	46	45.19	8.58	66	64.84	12.31	86	84.49	16.04
7	6.88	1.31	27	26.53	5.04	47	46.18	8.77	67	65.82	12.50	87	85.47	16.23
8	7.86	1.49	28	27.51	5.22	48	47.16	8.95	68	66.81	12.68	88	86.46	16.41
9	8.84	1.68	29	28.49	5.41	49	48.14	9.14	69	67.79	12.87	89	87.44	16.60
10	9.82	1.87	30	29.47	5.60	50	49.12	9.33	70	68.77	13.06	90	88.42	16.79
11	10.81	2.05	31	30.46	5.78	51	50.10	9.51	71	69.75	13.24	91	89.40	16.97
12	11.79	2.24	32	31.44	5.97	52	51.09	9.70	72	70.74	13.43	92	90.39	17.16
13	12.77	2.42	33	32.42	6.16	53	52.07	9.89	73	71.72	13.62	93	91.37	17.35
14	13.75	2.61	34	33.40	6.34	54	53.05	10.07	74	72.70	13.80	94	92.35	17.53
15	14.74	2.80	35	34.39	6.53	55	54.03	10.26	75	73.68	13.99	95	93.33	17.72
16	15.72	2.98	36	35.37	6.71	56	55.02	10.45	76	74.67	14.18	96	94.32	17.91
17	16.70	3.17	37	36.35	6.90	57	56.00	10.63	77	75.65	14.36	97	95.30	18.09
18	17.68	3.36	38	37.33	7.09	58	56.98	10.82	78	76.63	14.55	98	96.28	18.28
19	18.67	3.54	39	38.32	7.27	59	57.96	11.00	79	77.61	14.74	99	97.26	18.47
20	19.65	3.73	40	39.30	7.46	60	58.96	11.19	80	78.60	14.92	100	98.25	18.65

79 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.98	0.19	21	20.61	4.01	41	40.25	7.82	61	59.88	11.64	81	79.51	15.46
2	1.96	0.38	22	21.60	4.20	42	41.23	8.01	62	60.86	11.83	82	80.49	15.65
3	2.94	0.57	23	22.58	4.39	43	42.21	8.20	63	61.84	12.02	83	81.48	15.84
4	3.93	0.76	24	23.56	4.58	44	43.19	8.40	64	62.82	12.21	84	82.46	16.03
5	4.91	0.95	25	24.54	4.77	45	44.17	8.59	65	63.81	12.40	85	83.44	16.22
6	5.89	1.14	26	25.52	4.96	46	45.15	8.78	66	64.79	12.59	86	84.42	16.41
7	6.87	1.34	27	26.50	5.15	47	46.14	8.97	67	65.77	12.78	87	85.40	16.60
8	7.85	1.53	28	27.49	5.34	48	47.12	9.16	68	66.75	12.98	88	86.38	16.79
9	8.83	1.72	29	28.47	5.53	49	48.10	9.35	69	67.73	13.17	89	87.36	16.98
10	9.82	1.91	30	29.45	5.72	50	49.08	9.54	70	68.71	13.36	90	88.35	17.17
11	10.80	2.10	31	30.43	5.92	51	50.06	9.73	71	69.70	13.55	91	89.33	17.36
12	11.78	2.29	32	31.41	6.11	52	51.04	9.92	72	70.68	13.74	92	90.31	17.55
13	12.76	2.48	33	32.39	6.30	53	52.03	10.11	73	71.66	13.93	93	91.29	17.75
14	13.74	2.67	34	33.38	6.49	54	53.01	10.30	74	72.64	14.12	94	92.27	17.94
15	14.72	2.86	35	34.36	6.68	55	53.99	10.49	75	73.62	14.31	95	93.25	18.13
16	15.71	3.05	36	35.34	6.87	56	54.97	10.69	76	74.60	14.50	96	94.24	18.32
17	16.69	3.24	37	36.32	7.06	57	55.95	10.88	77	75.59	14.69	97	95.22	18.51
18	17.67	3.43	38	37.30	7.25	58	56.93	11.07	78	76.57	14.88	98	96.20	18.70
19	18.65	3.63	39	38.28	7.44	59	57.92	11.26	79	77.55	15.07	99	97.18	18.89
20	19.63	3.82	40	39.27	7.63	60	58.90	11.45	80	78.53	15.26	100	98.16	19.08

79 DEGREES

TRAVERSE TABLE

11 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.98	0.20	21	20.60	4.10	41	40.21	8.00	61	59.83	11.90	81	79.44	15.80
2	1.96	0.39	22	21.58	4.29	42	41.19	8.19	62	60.81	12.10	82	80.42	16.00
3	2.94	0.59	23	22.56	4.49	43	42.17	8.39	63	61.79	12.29	83	81.41	16.19
4	3.92	0.78	24	23.54	4.68	44	43.15	8.58	64	62.77	12.49	84	82.39	16.39
5	4.90	0.98	25	24.52	4.88	45	44.14	8.78	65	63.75	12.68	85	83.37	16.58
6	5.88	1.17	26	25.50	5.07	46	45.12	8.97	66	64.73	12.88	86	84.35	16.78
7	6.87	1.37	27	26.48	5.27	47	46.10	9.17	67	65.71	13.07	87	85.33	16.97
8	7.85	1.56	28	27.46	5.46	48	47.08	9.36	68	66.69	13.27	88	86.31	17.17
9	8.83	1.76	29	28.44	5.66	49	48.06	9.56	69	67.67	13.46	89	87.29	17.36
10	9.81	1.95	30	29.42	5.85	50	49.04	9.75	70	68.66	13.66	90	88.27	17.56
11	10.79	2.15	31	30.40	6.05	51	50.02	9.95	71	69.64	13.85	91	89.25	17.75
12	11.77	2.34	32	31.39	6.24	52	51.00	10.14	72	70.62	14.05	92	90.23	17.95
13	12.75	2.54	33	32.37	6.44	53	51.98	10.34	73	71.60	14.24	93	91.21	18.14
14	13.73	2.73	34	33.35	6.63	54	52.96	10.53	74	72.58	14.44	94	92.19	18.34
15	14.71	2.93	35	34.33	6.83	55	53.94	10.73	75	73.56	14.63	95	93.17	18.53
16	15.69	3.12	36	35.31	7.02	56	54.92	10.93	76	74.54	14.83	96	94.16	18.73
17	16.67	3.32	37	36.29	7.22	57	55.90	11.12	77	75.52	15.02	97	95.14	18.92
18	17.65	3.51	38	37.27	7.41	58	56.89	11.32	78	76.50	15.22	98	96.12	19.12
19	18.63	3.71	39	38.25	7.61	59	57.87	11.51	79	77.48	15.41	99	97.10	19.31
20	19.62	3.90	40	39.23	7.80	60	58.85	11.71	80	78.46	15.61	100	98.08	19.51

78 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.98	0.20	21	20.58	4.19	41	40.18	8.17	61	59.78	12.16	81	79.37	16.15
2	1.96	0.40	22	21.56	4.39	42	41.16	8.37	62	60.76	12.36	82	80.35	16.35
3	2.94	0.60	23	22.54	4.59	43	42.14	8.57	63	61.74	12.56	83	81.33	16.55
4	3.92	0.80	24	23.52	4.78	44	43.12	8.77	64	62.72	12.76	84	82.31	16.75
5	4.90	1.00	25	24.50	4.98	45	44.10	8.97	65	63.70	12.96	85	83.29	16.95
6	5.88	1.20	26	25.48	5.18	46	45.08	9.17	66	64.68	13.16	86	84.27	17.15
7	6.86	1.40	27	26.46	5.38	47	46.06	9.37	67	65.66	13.36	87	85.25	17.35
8	7.84	1.59	28	27.44	5.58	48	47.04	9.57	68	66.63	13.56	88	86.23	17.54
9	8.82	1.79	29	28.42	5.78	49	48.02	9.77	69	67.61	13.76	89	87.21	17.74
10	9.80	1.99	30	29.40	5.98	50	49.00	9.97	70	68.59	13.96	90	88.19	17.94
11	10.78	2.19	31	30.38	6.18	51	49.98	10.17	71	69.57	14.16	91	89.17	18.14
12	11.76	2.39	32	31.36	6.38	52	50.96	10.37	72	70.55	14.35	92	90.15	18.34
13	12.74	2.59	33	32.34	6.58	53	51.94	10.57	73	71.53	14.55	93	91.13	18.54
14	13.72	2.79	34	33.32	6.78	54	52.92	10.77	74	72.51	14.75	94	92.11	18.74
15	14.70	2.99	35	34.30	6.98	55	53.90	10.97	75	73.49	14.95	95	93.09	18.94
16	15.68	3.19	36	35.28	7.18	56	54.88	11.16	76	74.47	15.15	96	94.07	19.14
17	16.66	3.39	37	36.26	7.38	57	55.86	11.36	77	75.45	15.35	97	95.05	19.34
18	17.64	3.59	38	37.24	7.58	58	56.84	11.56	78	76.43	15.55	98	96.03	19.54
19	18.62	3.79	39	38.22	7.78	59	57.82	11.76	79	77.41	15.75	99	97.01	19.74
20	19.60	3.99	40	39.20	7.97	60	58.80	11.96	80	78.39	15.95	100	97.99	19.94

78 $\frac{1}{2}$ DEGREES

TRAVERSE TABLE

53

113½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.98	0.20	21	20.56	4.28	41	40.14	8.35	61	59.72	12.42	81	79.30	16.49
2	1.96	0.41	22	21.54	4.48	42	41.12	8.55	62	60.70	12.63	82	80.28	16.70
3	2.94	0.61	23	22.52	4.68	43	42.10	8.76	63	61.68	12.83	83	81.26	16.90
4	3.92	0.82	24	23.50	4.89	44	43.08	8.96	64	62.66	13.03	84	82.24	17.11
5	4.90	1.02	25	24.48	5.09	45	44.06	9.16	65	63.64	13.24	85	83.22	17.31
6	5.87	1.22	26	25.46	5.30	46	45.04	9.37	66	64.62	13.44	86	84.20	17.51
7	6.85	1.43	27	26.43	5.50	47	46.02	9.57	67	65.60	13.64	87	85.18	17.72
8	7.83	1.63	28	27.41	5.70	48	46.99	9.78	68	66.58	13.85	88	86.16	17.92
9	8.81	1.83	29	28.39	5.91	49	47.97	9.98	69	67.55	14.05	89	87.14	18.12
10	9.79	2.04	30	29.37	6.11	50	48.95	10.18	70	68.53	14.25	90	88.11	18.33
11	10.77	2.24	31	30.35	6.31	51	49.93	10.39	71	69.51	14.46	91	89.09	18.53
12	11.75	2.44	32	31.33	6.52	52	50.91	10.59	72	70.49	14.66	92	90.07	18.74
13	12.73	2.65	33	32.31	6.72	53	51.89	10.79	73	71.47	14.87	93	91.05	18.94
14	13.71	2.85	34	33.29	6.92	54	52.87	11.00	74	72.45	15.07	94	92.03	19.14
15	14.69	3.06	35	34.27	7.13	55	53.85	11.20	75	73.43	15.27	95	93.01	19.35
16	15.66	3.26	36	35.25	7.33	56	54.83	11.40	76	74.41	15.48	96	93.99	19.55
17	16.64	3.46	37	36.22	7.53	57	55.81	11.61	77	75.39	15.68	97	94.97	19.75
18	17.62	3.66	38	37.20	7.74	58	56.78	11.81	78	76.37	15.88	98	95.95	19.96
19	18.60	3.87	39	38.18	7.94	59	57.76	12.01	79	77.34	16.09	99	96.93	20.16
20	19.58	4.07	40	39.16	8.15	60	58.74	12.22	80	78.32	16.29	100	97.90	20.36

78½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.98	0.21	21	20.54	4.37	41	40.10	8.52	61	59.67	12.68	81	79.23	16.84
2	1.96	0.42	22	21.52	4.57	42	41.08	8.73	62	60.65	12.89	82	80.21	17.05
3	2.93	0.62	23	22.50	4.78	43	42.06	8.94	63	61.62	13.10	83	81.19	17.26
4	3.91	0.83	24	23.48	4.99	44	43.04	9.15	64	62.60	13.31	84	82.16	17.46
5	4.89	1.04	25	24.45	5.20	45	44.02	9.36	65	63.58	13.51	85	83.14	17.67
6	5.87	1.25	26	25.43	5.41	46	44.99	9.56	66	64.56	13.72	86	84.12	17.88
7	6.85	1.46	27	26.41	5.61	47	45.97	9.77	67	65.54	13.93	87	85.10	18.09
8	7.83	1.66	28	27.39	5.82	48	46.95	9.98	68	66.51	14.14	88	86.08	18.30
9	8.81	1.87	29	28.37	6.03	49	47.93	10.19	69	67.49	14.35	89	87.06	18.50
10	9.79	2.08	30	29.34	6.24	50	48.91	10.40	70	68.47	14.55	90	88.03	18.71
11	10.76	2.29	31	30.32	6.45	51	49.89	10.60	71	69.45	14.76	91	89.01	18.92
12	11.74	2.49	32	31.30	6.65	52	50.86	10.81	72	70.43	14.97	92	89.99	19.13
13	12.72	2.70	33	32.28	6.86	53	51.84	11.02	73	71.40	15.18	93	90.97	19.34
14	13.69	2.91	34	33.26	7.07	54	52.82	11.23	74	72.38	15.39	94	91.95	19.54
15	14.67	3.12	35	34.24	7.28	55	53.80	11.44	75	73.36	15.59	95	92.92	19.75
16	15.65	3.33	36	35.21	7.48	56	54.78	11.64	76	74.34	15.80	96	93.90	19.96
17	16.63	3.53	37	36.19	7.69	57	55.75	11.85	77	75.32	16.01	97	94.88	20.17
18	17.61	3.74	38	37.17	7.90	58	56.73	12.06	78	76.30	16.22	98	95.86	20.38
19	18.58	3.95	39	38.15	8.11	59	57.71	12.27	79	77.27	16.43	99	96.84	20.58
20	19.56	4.16	40	39.13	8.32	60	58.69	12.47	80	78.25	16.63	100	97.81	20.79

78 DEGREES

TRAVERSE TABLE

12½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.98	0.21	21	20.52	4.46	41	40.07	8.70	61	59.61	12.94	81	79.16	17.19
2	1.95	0.42	22	21.50	4.67	42	41.04	8.91	62	60.59	13.16	82	80.13	17.40
3	2.93	0.64	23	22.48	4.88	43	42.02	9.12	63	61.57	13.37	83	81.11	17.61
4	3.91	0.85	24	23.45	5.09	44	43.00	9.34	64	62.54	13.58	84	82.09	17.82
5	4.89	1.06	25	24.43	5.30	45	43.98	9.55	65	63.52	13.79	85	83.06	18.04
6	5.86	1.27	26	25.41	5.52	46	44.95	9.76	66	64.50	14.00	86	84.04	18.25
7	6.84	1.49	27	26.39	5.73	47	45.93	9.97	67	65.47	14.22	87	85.02	18.46
8	7.82	1.70	28	27.36	5.94	48	46.91	10.18	68	66.45	14.43	88	86.00	18.67
9	8.80	1.91	29	28.34	6.15	49	47.88	10.40	69	67.43	14.64	89	86.97	18.88
10	9.77	2.12	30	29.32	6.37	50	48.86	10.61	70	68.41	14.85	90	87.95	19.10
11	10.75	2.33	31	30.29	6.58	51	49.84	10.82	71	69.38	15.06	91	88.93	19.31
12	11.73	2.55	32	31.27	6.79	52	50.82	11.03	72	70.36	15.28	92	89.91	19.52
13	12.70	2.76	33	32.25	7.00	53	51.79	11.25	73	71.34	15.49	93	90.88	19.73
14	13.68	2.97	34	33.23	7.21	54	52.77	11.46	74	72.32	15.70	94	91.86	19.94
15	14.66	3.18	35	34.20	7.43	55	53.75	11.67	75	73.29	15.91	95	92.84	20.16
16	15.64	3.39	36	35.18	7.64	56	54.72	11.88	76	74.27	16.13	96	93.81	20.37
17	16.61	3.61	37	36.16	7.85	57	55.70	12.09	77	75.25	16.34	97	94.79	20.58
18	17.59	3.82	38	37.13	8.06	58	56.68	12.31	78	76.22	16.55	98	95.77	20.79
19	18.57	4.03	39	38.11	8.27	59	57.66	12.52	79	77.20	16.76	99	96.75	21.01
20	19.54	4.24	40	39.09	8.49	60	58.63	12.73	80	78.18	16.97	100	97.72	21.22

77¾ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.98	0.22	21	20.50	4.55	41	40.03	8.87	61	59.55	13.20	81	79.08	17.53
2	1.95	0.43	22	21.48	4.76	42	41.00	9.09	62	60.53	13.42	82	80.06	17.75
3	2.93	0.65	23	22.45	4.98	43	41.98	9.31	63	61.51	13.64	83	81.03	17.96
4	3.91	0.87	24	23.43	5.19	44	42.96	9.52	64	62.48	13.85	84	82.01	18.18
5	4.88	1.08	25	24.41	5.41	45	43.93	9.74	65	63.46	14.07	85	82.99	18.40
6	5.86	1.30	26	25.38	5.63	46	44.91	9.96	66	64.44	14.29	86	83.96	18.61
7	6.83	1.52	27	26.36	5.84	47	45.89	10.17	67	65.41	14.50	87	84.94	18.83
8	7.81	1.73	28	27.34	6.06	48	46.86	10.39	68	66.39	14.72	88	85.91	19.05
9	8.79	1.95	29	28.31	6.28	49	47.84	10.61	69	67.36	14.93	89	86.89	19.26
10	9.76	2.16	30	29.29	6.49	50	48.81	10.82	70	68.34	15.15	90	87.87	19.48
11	10.74	2.38	31	30.27	6.71	51	49.79	11.04	71	69.32	15.37	91	88.84	19.70
12	11.72	2.60	32	31.24	6.93	52	50.77	11.25	72	70.29	15.58	92	89.82	19.91
13	12.69	2.81	33	32.22	7.14	53	51.74	11.47	73	71.27	15.80	93	90.80	20.13
14	13.67	3.03	34	33.19	7.36	54	52.72	11.69	74	72.25	16.02	94	91.77	20.35
15	14.64	3.25	35	34.17	7.58	55	53.70	11.90	75	73.22	16.23	95	92.75	20.56
16	15.62	3.46	36	35.15	7.79	56	54.67	12.12	76	74.20	16.45	96	93.72	20.78
17	16.60	3.68	37	36.12	8.01	57	55.65	12.34	77	75.17	16.67	97	94.70	20.99
18	17.57	3.90	38	37.10	8.22	58	56.63	12.55	78	76.15	16.88	98	95.68	21.21
19	18.55	4.11	39	38.08	8.44	59	57.60	12.77	79	77.13	17.10	99	96.65	21.43
20	19.53	4.33	40	39.05	8.66	60	58.58	12.99	80	78.10	17.32	100	97.63	21.64

77½ DEGREES

123/4 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.98	0.22	21	20.48	4.63	41	39.99	9.05	61	59.50	13.46	81	79.00	17.88
2	1.95	0.44	22	21.46	4.86	42	40.96	9.27	62	60.47	13.68	82	79.98	18.10
3	2.93	0.66	23	22.43	5.08	43	41.94	9.49	63	61.45	13.90	83	80.95	18.32
4	3.90	0.88	24	23.41	5.30	44	42.92	9.71	64	62.42	14.12	84	81.93	18.54
5	4.88	1.10	25	24.38	5.52	45	43.89	9.93	65	63.40	14.35	85	82.90	18.76
6	5.85	1.32	26	25.36	5.74	46	44.87	10.15	66	64.37	14.57	86	83.88	18.98
7	6.83	1.54	27	26.33	5.96	47	45.84	10.37	67	65.35	14.79	87	84.85	19.20
8	7.80	1.77	28	27.31	6.18	48	46.82	10.59	68	66.32	15.01	88	85.83	19.42
9	8.78	1.99	29	28.28	6.40	49	47.79	10.81	69	67.30	15.23	89	86.81	19.64
10	9.75	2.21	30	29.26	6.62	50	48.77	11.03	70	68.27	15.45	90	87.78	19.86
11	10.73	2.43	31	30.24	6.84	51	49.74	11.26	71	69.25	15.67	91	88.76	20.08
12	11.70	2.65	32	31.21	7.06	52	50.72	11.48	72	70.22	15.89	92	89.73	20.30
13	12.68	2.87	33	32.19	7.28	53	51.69	11.70	73	71.20	16.11	93	90.71	20.52
14	13.65	3.09	34	33.16	7.50	54	52.67	11.92	74	72.18	16.33	94	91.68	20.75
15	14.63	3.31	35	34.14	7.72	55	53.64	12.14	75	73.15	16.55	95	92.66	20.97
16	15.61	3.53	36	35.11	7.95	56	54.62	12.36	76	74.13	16.77	96	93.63	21.19
17	16.58	3.75	37	36.09	8.17	57	55.59	12.58	77	75.10	16.99	97	94.61	21.41
18	17.56	3.97	38	37.06	8.39	58	56.57	12.80	78	76.08	17.21	98	95.58	21.63
19	18.53	4.19	39	38.04	8.61	59	57.55	13.02	79	77.05	17.44	99	96.56	21.85
20	19.51	4.41	40	39.01	8.83	60	58.52	13.24	80	78.03	17.66	100	97.53	22.07
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

77 1/4 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.97	0.23	21	20.46	4.72	41	39.95	9.22	61	59.44	13.72	81	78.92	18.22
2	1.95	0.45	22	21.44	4.95	42	40.92	9.45	62	60.41	13.95	82	79.90	18.45
3	2.92	0.67	23	22.41	5.17	43	41.90	9.67	63	61.39	14.17	83	80.87	18.67
4	3.90	0.90	24	23.38	5.40	44	42.87	9.90	64	62.36	14.40	84	81.85	18.90
5	4.87	1.12	25	24.36	5.62	45	43.85	10.12	65	63.33	14.62	85	82.82	19.12
6	5.85	1.35	26	25.33	5.85	46	44.82	10.35	66	64.31	14.85	86	83.80	19.35
7	6.82	1.57	27	26.31	6.07	47	45.80	10.57	67	65.28	15.07	87	84.77	19.57
8	7.80	1.80	28	27.28	6.30	48	46.77	10.80	68	66.26	15.30	88	85.74	19.80
9	8.77	2.02	29	28.26	6.52	49	47.74	11.02	69	67.23	15.52	89	86.72	20.02
10	9.74	2.25	30	29.23	6.75	50	48.72	11.25	70	68.21	15.75	90	87.69	20.25
11	10.72	2.47	31	30.21	6.97	51	49.69	11.47	71	69.18	15.97	91	88.67	20.47
12	11.69	2.70	32	31.18	7.20	52	50.67	11.70	72	70.15	16.20	92	89.64	20.70
13	12.67	2.92	33	32.15	7.42	53	51.64	11.92	73	71.13	16.42	93	90.62	20.92
14	13.64	3.15	34	33.13	7.65	54	52.62	12.15	74	72.10	16.65	94	91.59	21.15
15	14.62	3.37	35	34.10	7.87	55	53.59	12.37	75	73.08	16.87	95	92.57	21.37
16	15.59	3.60	36	35.08	8.10	56	54.56	12.60	76	74.05	17.10	96	93.54	21.60
17	16.57	3.82	37	36.05	8.32	57	55.54	12.82	77	75.03	17.32	97	94.51	21.82
18	17.54	4.05	38	37.03	8.55	58	56.51	13.05	78	76.00	17.55	98	95.49	22.05
19	18.51	4.27	39	38.00	8.77	59	57.49	13.27	79	76.98	17.77	99	96.46	22.27
20	19.49	4.50	40	38.97	9.00	60	58.46	13.50	80	77.95	18.00	100	97.44	22.50
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

77 DEGREES

TRAVERSE TABLE

13½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.97	0.23	21	20.44	4.81	41	39.91	9.40	61	59.38	13.98	81	78.84	18.57
2	1.95	0.46	22	21.41	5.04	42	40.88	9.63	62	60.35	14.21	82	79.82	18.79
3	2.92	0.69	23	22.39	5.27	43	41.86	9.86	63	61.32	14.44	83	80.79	19.02
4	3.89	0.92	24	23.36	5.50	44	42.83	10.08	64	62.30	14.67	84	81.76	19.25
5	4.87	1.15	25	24.33	5.73	45	43.80	10.31	65	63.27	14.90	85	82.74	19.48
6	5.84	1.38	26	25.31	5.96	46	44.78	10.54	66	64.24	15.13	86	83.71	19.71
7	6.81	1.60	27	26.28	6.19	47	45.75	10.77	67	65.22	15.36	87	84.68	19.94
8	7.79	1.83	28	27.25	6.42	48	46.72	11.00	68	66.19	15.59	88	85.66	20.17
9	8.76	2.06	29	28.23	6.65	49	47.70	11.23	69	67.16	15.81	89	86.63	20.40
10	9.73	2.29	30	29.20	6.88	50	48.67	11.46	70	68.14	16.04	90	87.60	20.63
11	10.71	2.52	31	30.17	7.11	51	49.64	11.69	71	69.11	16.27	91	88.58	20.86
12	11.68	2.75	32	31.15	7.33	52	50.62	11.92	72	70.08	16.50	92	89.55	21.09
13	12.65	2.98	33	32.12	7.56	53	51.59	12.15	73	71.06	16.73	93	90.52	21.32
14	13.63	3.21	34	33.09	7.79	54	52.56	12.38	74	72.03	16.96	94	91.50	21.54
15	14.60	3.44	35	34.07	8.02	55	53.54	12.61	75	73.00	17.19	95	92.47	21.77
16	15.57	3.67	36	35.04	8.25	56	54.51	12.84	76	73.98	17.42	96	93.44	22.00
17	16.55	3.90	37	36.02	8.48	57	55.48	13.06	77	74.95	17.65	97	94.42	22.23
18	17.52	4.13	38	36.99	8.71	58	56.46	13.29	78	75.92	17.88	98	95.39	22.46
19	18.49	4.35	39	37.96	8.94	59	57.43	13.52	79	76.90	18.11	99	96.36	22.69
20	19.47	4.58	40	38.94	9.17	60	58.40	13.75	80	77.87	18.34	100	97.34	22.92

Dist.	Dep.	Lat.												
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76¾ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.97	0.23	21	20.42	4.90	41	39.87	9.57	61	59.31	14.24	81	78.76	18.91
2	1.95	0.47	22	21.39	5.14	42	40.84	9.80	62	60.29	14.47	82	79.73	19.14
3	2.92	0.70	23	22.36	5.37	43	41.81	10.04	63	61.26	14.71	83	80.71	19.38
4	3.89	0.93	24	23.34	5.60	44	42.78	10.27	64	62.23	14.94	84	81.68	19.61
5	4.86	1.17	25	24.31	5.84	45	43.76	10.51	65	63.20	15.17	85	82.65	19.84
6	5.83	1.40	26	25.28	6.07	46	44.73	10.74	66	64.18	15.41	86	83.62	20.08
7	6.81	1.63	27	26.25	6.30	47	45.70	10.97	67	65.15	15.64	87	84.60	20.31
8	7.78	1.87	28	27.23	6.54	48	46.67	11.21	68	66.12	15.87	88	85.57	20.54
9	8.75	2.10	29	28.20	6.77	49	47.65	11.44	69	67.09	16.11	89	86.54	20.78
10	9.72	2.33	30	29.17	7.00	50	48.62	11.67	70	68.07	16.34	90	87.51	21.01
11	10.70	2.57	31	30.14	7.24	51	49.59	11.91	71	69.04	16.57	91	88.49	21.24
12	11.67	2.80	32	31.12	7.47	52	50.56	12.14	72	70.01	16.81	92	89.46	21.48
13	12.64	3.03	33	32.09	7.70	53	51.54	12.37	73	71.98	17.04	93	90.43	21.71
14	13.61	3.27	34	33.06	7.94	54	52.51	12.61	74	72.96	17.28	94	91.40	21.94
15	14.59	3.50	35	34.03	8.17	55	53.48	12.84	75	73.93	17.50	95	92.38	22.18
16	15.56	3.74	36	35.01	8.40	56	54.45	13.07	76	74.90	17.74	96	93.35	22.41
17	16.53	3.97	37	35.98	8.64	57	55.43	13.31	77	75.87	17.98	97	94.32	22.64
18	17.50	4.20	38	36.95	8.87	58	56.40	13.54	78	76.84	18.21	98	95.29	22.88
19	18.48	4.44	39	37.92	9.10	59	57.37	13.77	79	76.82	18.44	99	96.26	23.11
20	19.45	4.67	40	38.89	9.34	60	58.34	14.01	80	77.79	18.68	100	97.24	23.34

Dist.	Dep.	Lat.												
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76½ DEGREES

TRAVERSE TABLE

57

133 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.97	0.24	21	20.40	4.99	41	39.83	9.75	61	59.25	14.50	81	78.68	19.25
2	1.94	0.48	22	21.37	5.23	42	40.80	9.98	62	60.22	14.74	82	79.65	19.49
3	2.91	0.71	23	22.34	5.47	43	41.77	10.22	63	61.19	14.97	83	80.62	19.73
4	3.89	0.95	24	23.31	5.70	44	42.74	10.46	64	62.17	15.21	84	81.59	19.97
5	4.86	1.19	25	24.28	5.94	45	43.71	10.70	65	63.14	15.45	85	82.56	20.20
6	5.83	1.43	26	25.25	6.18	46	44.68	10.93	66	64.11	15.69	86	83.54	20.44
7	6.80	1.66	27	26.23	6.42	47	45.65	11.17	67	65.08	15.93	87	84.51	20.68
8	7.77	1.90	28	27.20	6.66	48	46.62	11.41	68	66.05	16.16	88	85.48	20.92
9	8.74	2.14	29	28.17	6.89	49	47.60	11.65	69	67.02	16.40	89	86.45	21.15
10	9.71	2.38	30	29.14	7.13	50	48.57	11.88	70	67.99	16.64	90	87.42	21.39
11	10.68	2.61	31	30.11	7.37	51	49.54	12.12	71	68.97	16.88	91	88.39	21.63
12	11.66	2.85	32	31.08	7.61	52	50.51	12.36	72	69.94	17.11	92	89.36	21.87
13	12.63	3.09	33	32.05	7.84	53	51.48	12.60	73	70.91	17.35	93	90.33	22.10
14	13.60	3.33	34	33.03	8.08	54	52.45	12.84	74	71.88	17.59	94	91.31	22.34
15	14.57	3.57	35	34.00	8.32	55	53.42	13.07	75	72.85	17.83	95	92.28	22.58
16	15.54	3.80	36	34.97	8.56	56	54.40	13.31	76	73.82	18.06	96	93.25	22.82
17	16.51	4.04	37	35.94	8.79	57	55.37	13.55	77	74.79	18.30	97	94.22	23.06
18	17.48	4.28	38	36.91	9.03	58	56.34	13.79	78	75.76	18.54	98	95.19	23.29
19	18.46	4.52	39	37.88	9.27	59	57.31	14.02	79	76.74	18.78	99	96.16	23.53
20	19.43	4.75	40	38.85	9.51	60	58.28	14.26	80	77.71	19.01	100	97.13	23.77

76 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.97	0.24	21	20.38	5.08	41	39.78	9.92	61	59.19	14.76	81	78.59	19.60
2	1.94	0.48	22	21.35	5.32	42	40.75	10.16	62	60.16	15.00	82	79.56	19.84
3	2.91	0.73	23	22.32	5.56	43	41.72	10.40	63	61.13	15.24	83	80.53	20.08
4	3.88	0.97	24	23.29	5.81	44	42.69	10.64	64	62.10	15.48	84	81.50	20.32
5	4.85	1.21	25	24.26	6.05	45	43.66	10.89	65	63.07	15.72	85	82.48	20.56
6	5.82	1.45	26	25.23	6.29	46	44.63	11.13	66	64.04	15.97	86	83.45	20.81
7	6.79	1.69	27	26.20	6.53	47	45.60	11.37	67	65.01	16.21	87	84.42	21.05
8	7.76	1.94	28	27.17	6.77	48	46.57	11.61	68	65.98	16.45	88	85.39	21.29
9	8.73	2.18	29	28.14	7.02	49	47.54	11.85	69	66.95	16.69	89	86.36	21.53
10	9.70	2.42	30	29.11	7.26	50	48.51	12.10	70	67.92	16.93	90	87.33	21.77
11	10.67	2.66	31	30.08	7.50	51	49.49	12.34	71	68.89	17.18	91	88.30	22.01
12	11.64	2.90	32	31.05	7.74	52	50.46	12.58	72	69.86	17.42	92	89.27	22.26
13	12.61	3.15	33	32.02	7.98	53	51.43	12.82	73	70.83	17.66	93	90.24	22.50
14	13.58	3.39	34	32.99	8.23	54	52.40	13.06	74	71.80	17.90	94	91.21	22.74
15	14.55	3.63	35	33.96	8.47	55	53.37	13.31	75	72.77	18.14	95	92.18	22.98
16	15.52	3.87	36	34.93	8.71	56	54.34	13.55	76	73.74	18.39	96	93.15	23.22
17	16.50	4.11	37	35.90	8.95	57	55.31	13.79	77	74.71	18.63	97	94.12	23.47
18	17.47	4.35	38	36.87	9.19	58	56.28	14.03	78	75.68	18.87	98	95.09	23.71
19	18.44	4.60	39	37.84	9.44	59	57.25	14.27	79	76.65	19.11	99	96.06	23.95
20	19.41	4.84	40	38.81	9.68	60	58.22	14.52	80	77.62	19.35	100	97.03	24.19

76 DEGREES

TRAVERSE TABLE

14½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.97	0.25	21	20.35	5.17	41	39.74	10.09	61	59.12	15.02	81	78.51	19.94
2	1.94	0.49	22	21.32	5.42	42	40.71	10.34	62	60.09	15.26	82	79.48	20.18
3	2.91	0.74	23	22.29	5.66	43	41.68	10.58	63	61.06	15.51	83	80.45	20.43
4	3.88	0.98	24	23.26	5.91	44	42.65	10.83	64	62.03	15.75	84	81.42	20.68
5	4.85	1.23	25	24.23	6.15	45	43.62	11.08	65	63.00	16.00	85	82.38	20.92
6	5.82	1.48	26	25.20	6.40	46	44.58	11.32	66	63.97	16.25	86	83.35	21.17
7	6.78	1.72	27	26.17	6.65	47	45.55	11.57	67	64.94	16.49	87	84.32	21.42
8	7.75	1.97	28	27.14	6.89	48	46.52	11.82	68	65.91	16.74	88	85.29	21.66
9	8.72	2.22	29	28.11	7.14	49	47.49	12.06	69	66.88	16.98	89	86.26	21.91
10	9.69	2.46	30	29.08	7.38	50	48.46	12.31	70	67.85	17.23	90	87.23	22.15
11	10.66	2.71	31	30.05	7.63	51	49.43	12.55	71	68.82	17.48	91	88.20	22.40
12	11.63	2.95	32	31.02	7.88	52	50.40	12.80	72	69.78	17.72	92	89.17	22.65
13	12.60	3.20	33	31.98	8.12	53	51.37	13.05	73	70.75	17.97	93	90.14	22.89
14	13.57	3.45	34	32.95	8.37	54	52.34	13.29	74	71.72	18.22	94	91.11	23.14
15	14.54	3.69	35	33.92	8.62	55	53.31	13.54	75	72.69	18.46	95	92.08	23.38
16	15.51	3.94	36	34.89	8.86	56	54.28	13.78	76	73.66	18.71	96	93.05	23.63
17	16.48	4.18	37	35.86	9.11	57	55.25	14.03	77	74.63	18.95	97	94.02	23.88
18	17.45	4.43	38	36.83	9.35	58	56.22	14.28	78	75.60	19.20	98	94.98	24.12
19	18.42	4.68	39	37.80	9.60	59	57.18	14.52	79	76.57	19.45	99	95.95	24.37
20	19.38	4.92	40	38.77	9.85	60	58.15	14.77	80	77.54	19.69	100	96.92	24.62

75¾ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.97	0.25	21	20.33	5.26	41	39.69	10.27	61	59.06	15.27	81	78.42	20.28
2	1.94	0.50	22	21.30	5.51	42	40.66	10.52	62	60.03	15.52	82	79.39	20.53
3	2.90	0.75	23	22.27	5.76	43	41.63	10.77	63	60.99	15.77	83	80.36	20.78
4	3.87	1.00	24	23.24	6.01	44	42.60	11.02	64	61.96	16.02	84	81.32	21.03
5	4.84	1.25	25	24.20	6.26	45	43.57	11.27	65	62.93	16.27	85	82.29	21.28
6	5.81	1.50	26	25.17	6.51	46	44.53	11.52	66	63.90	16.53	86	83.26	21.53
7	6.78	1.75	27	26.14	6.76	47	45.50	11.77	67	64.87	16.78	87	84.23	21.78
8	7.75	2.00	28	27.11	7.01	48	46.47	12.02	68	65.83	17.03	88	85.20	22.03
9	8.71	2.25	29	28.08	7.26	49	47.44	12.27	69	66.80	17.28	89	86.17	22.28
10	9.68	2.50	30	29.04	7.51	50	48.41	12.52	70	67.77	17.53	90	87.13	22.53
11	10.65	2.75	31	30.01	7.76	51	49.38	12.77	71	68.74	17.78	91	88.10	22.78
12	11.62	3.00	32	30.98	8.01	52	50.34	13.02	72	69.71	18.03	92	89.07	23.04
13	12.59	3.25	33	31.95	8.26	53	51.31	13.27	73	70.67	18.28	93	90.04	23.29
14	13.55	3.51	34	32.92	8.51	54	52.28	13.52	74	71.64	18.53	94	91.01	23.54
15	14.52	3.76	35	33.89	8.76	55	53.25	13.77	75	72.61	18.78	95	91.97	23.79
16	15.49	4.01	36	34.85	9.01	56	54.22	14.02	76	73.58	19.03	96	92.94	24.04
17	16.46	4.26	37	35.82	9.26	57	55.18	14.27	77	74.55	19.28	97	93.91	24.29
18	17.43	4.51	38	36.79	9.51	58	56.15	14.52	78	75.52	19.53	98	94.88	24.54
19	18.39	4.76	39	37.76	9.76	59	57.12	14.77	79	76.48	19.78	99	95.85	24.79
20	19.36	5.01	40	38.73	10.02	60	58.09	15.02	80	77.45	20.03	100	96.81	25.04

75½ DEGREES

143/4 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.97	0.25	21	20.31	5.35	41	39.65	10.44	61	58.99	15.53	81	78.33	20.62
2	1.93	0.51	22	21.28	5.60	42	40.62	10.69	62	59.96	15.79	82	79.30	20.88
3	2.90	0.76	23	22.24	5.86	43	41.58	10.95	63	60.92	16.04	83	80.26	21.13
4	3.87	1.02	24	23.21	6.11	44	42.55	11.20	64	61.89	16.29	84	81.23	21.39
5	4.84	1.27	25	24.18	6.37	45	43.52	11.46	65	62.86	16.55	85	82.20	21.64
6	5.80	1.53	26	25.14	6.62	46	44.48	11.71	66	63.83	16.80	86	83.17	21.90
7	6.77	1.78	27	26.11	6.87	47	45.45	11.97	67	64.79	17.06	87	84.13	22.15
8	7.74	2.04	28	27.08	7.13	48	46.42	12.22	68	65.76	17.31	88	85.10	22.41
9	8.70	2.29	29	28.04	7.38	49	47.39	12.48	69	66.73	17.57	89	86.07	22.66
10	9.67	2.55	30	29.01	7.64	50	48.35	12.73	70	67.69	17.82	90	87.03	22.91
11	10.64	2.80	31	29.98	7.89	51	49.32	12.98	71	68.66	18.08	91	88.00	23.17
12	11.60	3.06	32	30.95	8.15	52	50.29	13.24	72	69.63	18.33	92	88.97	23.42
13	12.57	3.31	33	31.91	8.40	53	51.25	13.49	73	70.59	18.59	93	89.94	23.68
14	13.54	3.56	34	32.88	8.66	54	52.22	13.75	74	71.56	18.84	94	90.90	23.93
15	14.51	3.82	35	33.85	8.91	55	53.19	14.00	75	72.53	19.10	95	91.87	24.19
16	15.47	4.07	36	34.81	9.17	56	54.15	14.26	76	73.50	19.35	96	92.84	24.44
17	16.44	4.33	37	35.78	9.42	57	55.12	14.51	77	74.46	19.60	97	93.80	24.70
18	17.41	4.58	38	36.75	9.67	58	56.09	14.77	78	75.43	19.86	98	94.77	24.95
19	18.37	4.84	39	37.71	9.93	59	57.06	15.02	79	76.40	20.11	99	95.74	25.21
20	19.34	5.09	40	38.68	10.18	60	58.02	15.28	80	77.36	20.37	100	96.70	25.46

Dist.	Dep.	Lat.												
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75 1/4 DEGREES

15 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.97	0.26	21	20.28	5.44	41	39.60	10.61	61	58.92	15.79	81	78.24	20.96
2	1.93	0.52	22	21.25	5.69	42	40.57	10.87	62	59.89	16.05	82	79.21	21.22
3	2.90	0.78	23	22.22	5.95	43	41.53	11.13	63	60.85	16.31	83	80.17	21.48
4	3.86	1.04	24	23.18	6.21	44	42.50	11.39	64	61.82	16.56	84	81.14	21.74
5	4.83	1.29	25	24.15	6.47	45	43.47	11.65	65	62.79	16.82	85	82.10	22.00
6	5.80	1.55	26	25.11	6.73	46	44.43	11.91	66	63.75	17.08	86	83.07	22.26
7	6.76	1.81	27	26.08	6.99	47	45.40	12.16	67	64.72	17.34	87	84.04	22.52
8	7.73	2.07	28	27.05	7.25	48	46.36	12.42	68	65.68	17.60	88	85.00	22.78
9	8.69	2.33	29	28.01	7.51	49	47.33	12.68	69	66.65	17.86	89	85.97	23.03
10	9.66	2.59	30	28.98	7.76	50	48.30	12.94	70	67.61	18.12	90	86.93	23.29
11	10.63	2.85	31	29.94	8.02	51	49.26	13.20	71	68.58	18.38	91	87.90	23.55
12	11.59	3.11	32	30.91	8.28	52	50.23	13.46	72	69.55	18.63	92	88.87	23.81
13	12.56	3.36	33	31.88	8.54	53	51.19	13.72	73	70.51	18.89	93	89.83	24.07
14	13.52	3.62	34	32.84	8.80	54	52.16	13.98	74	71.48	19.15	94	90.80	24.33
15	14.49	3.88	35	33.81	9.06	55	53.13	14.24	75	72.44	19.41	95	91.76	24.59
16	15.45	4.14	36	34.77	9.32	56	54.09	14.49	76	73.41	19.67	96	92.73	24.85
17	16.42	4.40	37	35.74	9.58	57	55.06	14.75	77	74.38	19.93	97	93.69	25.11
18	17.39	4.66	38	36.71	9.84	58	56.02	15.01	78	75.34	20.19	98	94.66	25.36
19	18.35	4.92	39	37.67	10.09	59	56.99	15.27	79	76.31	20.45	99	95.63	25.62
20	19.32	5.18	40	38.64	10.35	60	57.96	15.53	80	77.27	20.71	100	96.59	25.88

Dist.	Dep.	Lat.												
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75 DEGREES

TRAVERSE TABLE

15¼ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.96	0.26	21	20.26	5.52	41	39.56	10.78	61	58.85	16.04	81	78.15	21.31
2	1.93	0.53	22	21.23	5.79	42	40.52	11.05	62	59.82	16.31	82	79.11	21.57
3	2.89	0.79	23	22.19	6.05	43	41.49	11.31	63	60.78	16.57	83	80.08	21.83
4	3.86	1.05	24	23.15	6.31	44	42.45	11.57	64	61.75	16.83	84	81.04	22.09
5	4.82	1.32	25	24.12	6.58	45	43.42	11.84	65	62.71	17.10	85	82.01	22.36
6	5.79	1.58	26	25.08	6.84	46	44.38	12.10	66	63.68	17.36	86	82.97	22.62
7	6.75	1.84	27	26.05	7.10	47	45.35	12.36	67	64.64	17.62	87	83.94	22.88
8	7.72	2.10	28	27.01	7.36	48	46.31	12.63	68	65.61	17.89	88	84.90	23.15
9	8.68	2.37	29	27.98	7.63	49	47.27	12.89	69	66.57	18.15	89	85.87	23.41
10	9.65	2.63	30	28.94	7.89	50	48.24	13.15	70	67.54	18.41	90	86.83	23.67
11	10.61	2.89	31	29.91	8.15	51	49.20	13.41	71	68.50	18.68	91	87.80	23.94
12	11.58	3.16	32	30.87	8.42	52	50.17	13.68	72	69.46	18.94	92	88.76	24.20
13	12.54	3.42	33	31.84	8.68	53	51.13	13.94	73	70.43	19.20	93	89.73	24.46
14	13.51	3.68	34	32.80	8.94	54	52.10	14.20	74	71.39	19.46	94	90.69	24.72
15	14.47	3.95	35	33.77	9.21	55	53.06	14.47	75	72.36	19.73	95	91.65	24.99
16	15.44	4.21	36	34.73	9.47	56	54.03	14.73	76	73.32	19.99	96	92.62	25.25
17	16.40	4.47	37	35.70	9.73	57	54.99	14.99	77	74.29	20.25	97	93.58	25.51
18	17.37	4.73	38	36.66	10.00	58	55.96	15.26	78	75.25	20.52	98	94.55	25.78
19	18.33	5.00	39	37.63	10.26	59	56.92	15.52	79	76.22	20.78	99	95.51	26.04
20	19.30	5.26	40	38.59	10.52	60	57.89	15.78	80	77.18	21.04	100	96.48	26.30

74¾ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.96	0.27	21	20.24	5.61	41	39.51	10.96	61	58.78	16.30	81	78.05	21.65
2	1.93	0.53	22	21.20	5.88	42	40.47	11.22	62	59.75	16.57	82	79.02	21.91
3	2.89	0.80	23	22.16	6.15	43	41.44	11.49	63	60.71	16.84	83	79.98	22.18
4	3.85	1.07	24	23.13	6.41	44	42.40	11.76	64	61.67	17.10	84	80.94	22.45
5	4.82	1.34	25	24.09	6.68	45	43.36	12.03	65	62.64	17.37	85	81.91	22.72
6	5.78	1.60	26	25.05	6.95	46	44.33	12.29	66	63.60	17.64	86	82.87	22.98
7	6.75	1.87	27	26.02	7.22	47	45.29	12.56	67	64.56	17.90	87	83.84	23.25
8	7.71	2.14	28	26.98	7.48	48	46.25	12.83	68	65.53	18.17	88	84.80	23.52
9	8.67	2.41	29	27.95	7.75	49	47.22	13.09	69	66.49	18.44	89	85.76	23.78
10	9.64	2.67	30	28.91	8.02	50	48.18	13.36	70	67.45	18.71	90	86.73	24.05
11	10.60	2.94	31	29.87	8.28	51	49.15	13.63	71	68.42	18.97	91	87.69	24.32
12	11.56	3.21	32	30.84	8.55	52	50.11	13.90	72	69.38	19.24	92	88.65	24.59
13	12.53	3.47	33	31.80	8.82	53	51.07	14.16	73	70.35	19.51	93	89.62	24.85
14	13.49	3.74	34	32.76	9.09	54	52.04	14.43	74	71.31	19.78	94	90.58	25.12
15	14.45	4.01	35	33.73	9.35	55	53.00	14.70	75	72.27	20.04	95	91.54	25.39
16	15.42	4.28	36	34.69	9.62	56	53.96	14.97	76	73.24	20.31	96	92.51	25.65
17	16.38	4.54	37	35.65	9.89	57	54.93	15.23	77	74.20	20.58	97	93.47	25.92
18	17.35	4.81	38	35.62	10.16	58	55.89	15.50	78	75.16	20.84	98	94.44	26.19
19	18.31	5.08	39	37.58	10.42	59	56.85	15.77	79	76.13	21.11	99	95.40	26.46
20	19.27	5.34	40	38.55	10.69	60	57.82	16.03	80	77.09	21.38	100	96.36	26.72

74½ DEGREES

TRAVERSE TABLE

61

153 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.
1	0.96	0.27	21	20.21	5.70	41	39.46	11.13	61	58.71	16.56	81	77.96	21.99
2	1.92	0.54	22	21.17	5.97	42	40.42	11.40	62	59.67	16.83	82	78.92	22.26
3	2.89	0.81	23	22.14	6.24	43	41.39	11.67	63	60.63	17.10	83	79.88	22.53
4	3.85	1.09	24	23.10	6.51	44	42.35	11.94	64	61.60	17.37	84	80.85	22.80
5	4.81	1.36	25	24.06	6.79	45	43.31	12.21	65	62.56	17.64	85	81.81	23.07
6	5.77	1.63	26	25.02	7.06	46	44.27	12.49	66	63.52	17.92	86	82.77	23.34
7	6.74	1.90	27	25.99	7.33	47	45.24	12.76	67	64.48	18.19	87	83.73	23.62
8	7.70	2.17	28	26.95	7.60	48	46.20	13.03	68	65.45	18.46	88	84.70	23.89
9	8.66	2.44	29	27.91	7.87	49	47.16	13.30	69	66.41	18.73	89	85.66	24.16
10	9.62	2.71	30	28.87	8.14	50	48.12	13.57	70	67.37	19.00	90	86.62	24.43
11	10.59	2.99	31	29.84	8.41	51	49.09	13.84	71	68.33	19.27	91	87.58	24.70
12	11.55	3.26	32	30.80	8.69	52	50.05	14.11	72	69.30	19.54	92	88.55	24.97
13	12.51	3.53	33	31.76	8.96	53	51.01	14.39	73	70.26	19.82	93	89.51	25.24
14	13.47	3.80	34	32.72	9.23	54	51.97	14.66	74	71.22	20.09	94	90.47	25.52
15	14.44	4.07	35	33.69	9.50	55	52.94	14.93	75	72.18	20.36	95	91.43	25.79
16	15.40	4.34	36	34.65	9.77	56	53.90	15.20	76	73.15	20.63	96	92.40	26.06
17	16.36	4.61	37	35.61	10.04	57	54.86	15.47	77	74.11	20.90	97	93.36	26.33
18	17.32	4.89	38	36.57	10.31	58	55.82	15.74	78	75.07	21.17	98	94.32	26.60
19	18.29	5.16	39	37.54	10.59	59	56.78	16.01	79	76.03	21.44	99	95.28	26.87
20	19.25	5.43	40	38.50	10.86	60	57.75	16.29	80	77.00	21.72	100	96.25	27.14
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

74 $\frac{1}{4}$ DEGREES

16 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.
1	0.96	0.28	21	20.19	5.79	41	39.41	11.30	61	58.64	16.81	81	77.86	22.33
2	1.92	0.55	22	21.15	6.06	42	40.37	11.58	62	59.60	17.09	82	78.82	22.60
3	2.89	0.83	23	22.11	6.34	43	41.33	11.85	63	60.53	17.37	83	79.78	22.88
4	3.85	1.10	24	23.07	6.62	44	42.30	12.13	64	61.52	17.64	84	80.75	23.15
5	4.81	1.38	25	24.03	6.89	45	43.26	12.40	65	62.48	17.92	85	81.71	23.43
6	5.77	1.65	26	24.99	7.17	46	44.22	12.68	66	63.44	18.19	86	82.67	23.70
7	6.73	1.93	27	25.95	7.44	47	45.18	12.95	67	64.40	18.47	87	83.63	23.98
8	7.69	2.21	28	26.92	7.72	48	46.14	13.23	68	65.37	18.74	88	84.59	24.26
9	8.65	2.48	29	27.88	7.99	49	47.10	13.51	69	66.33	19.02	89	85.55	24.53
10	9.61	2.76	30	28.84	8.27	50	48.06	13.78	70	67.29	19.29	90	86.51	24.81
11	10.57	3.03	31	29.80	8.54	51	49.02	14.06	71	68.25	19.57	91	87.47	25.08
12	11.54	3.31	32	30.76	8.82	52	49.99	14.33	72	69.21	19.85	92	88.44	25.36
13	12.50	3.58	33	31.72	9.10	53	50.95	14.61	73	70.17	20.12	93	89.49	25.63
14	13.46	3.86	34	32.68	9.37	54	51.91	14.88	74	71.13	20.40	94	90.36	25.91
15	14.42	4.13	35	33.64	9.65	55	52.87	15.16	75	72.09	20.67	95	91.32	26.19
16	15.38	4.41	36	34.61	9.92	56	53.83	15.44	76	73.06	20.95	96	92.28	26.46
17	16.34	4.69	37	35.57	10.20	57	54.79	15.71	77	74.02	21.22	97	93.24	26.74
18	17.30	4.96	38	36.53	10.47	58	55.75	15.99	78	74.98	21.50	98	94.20	27.01
19	18.26	5.24	39	37.49	10.75	59	56.71	16.26	79	75.94	21.78	99	95.16	27.29
20	19.23	5.51	40	38.45	10.03	60	57.68	16.54	80	76.90	22.05	100	96.13	27.56
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

74 DEGREES

TRAVERSE TABLE

16 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.96	0.28	21	20.16	5.88	41	39.36	11.47	61	58.56	17.07	81	77.76	22.67
2	1.92	0.56	22	21.12	6.16	42	40.32	11.75	62	59.52	17.35	82	78.72	22.95
3	2.88	0.84	23	22.08	6.44	43	41.28	12.03	63	60.48	17.63	83	79.68	23.23
4	3.84	1.12	24	23.04	6.72	44	42.24	12.31	64	61.44	17.91	84	80.64	23.51
5	4.80	1.40	25	24.00	7.00	45	43.20	12.59	65	62.40	18.19	85	81.60	23.79
6	5.76	1.68	26	24.96	7.28	46	44.16	12.87	66	63.36	18.47	86	82.56	24.07
7	6.72	1.96	27	25.92	7.56	47	45.12	13.15	67	64.32	18.75	87	83.52	24.35
8	7.68	2.24	28	26.88	7.84	48	46.08	13.43	68	65.28	19.03	88	84.48	24.62
9	8.64	2.52	29	27.84	8.11	49	47.04	13.71	69	66.24	19.31	89	85.44	24.90
10	9.60	2.80	30	28.80	8.39	50	48.00	13.99	70	67.20	19.59	90	86.40	25.18
11	10.56	3.08	31	29.76	8.67	51	48.96	14.27	71	68.16	19.87	91	87.36	25.46
12	11.52	3.36	32	30.72	8.95	52	49.92	14.55	72	69.12	20.15	92	88.32	25.74
13	12.48	3.64	33	31.68	9.23	53	50.88	14.83	73	70.08	20.43	93	89.28	26.02
14	13.44	3.92	34	32.64	9.51	54	51.84	15.11	74	71.04	20.71	94	90.24	26.30
15	14.40	4.20	35	33.60	9.79	55	52.80	15.39	75	72.00	20.99	95	91.20	26.58
16	15.36	4.48	36	34.56	10.07	56	53.76	15.67	76	72.96	21.27	96	92.16	26.86
17	16.32	4.76	37	35.52	10.35	57	54.72	15.95	77	73.92	21.55	97	93.12	27.14
18	17.28	5.04	38	36.48	10.63	58	55.68	16.23	78	74.88	21.83	98	94.08	27.42
19	18.24	5.32	39	37.44	10.91	59	56.64	16.51	79	75.84	22.11	99	95.04	27.70
20	19.20	5.60	40	38.40	11.19	60	57.60	16.79	80	76.80	22.39	100	96.00	27.98
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

73 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.96	0.28	21	20.14	5.96	41	39.31	11.64	61	58.49	17.32	81	77.66	23.01
2	1.92	0.57	22	21.09	6.25	42	40.27	11.93	62	59.45	17.61	82	78.62	23.29
3	2.88	0.85	23	22.05	6.53	43	41.23	12.21	63	60.41	17.89	83	79.58	23.57
4	3.84	1.14	24	23.01	6.82	44	42.19	12.50	64	61.36	18.18	84	80.54	23.86
5	4.79	1.42	25	23.97	7.10	45	43.15	12.78	65	62.32	18.46	85	81.50	24.14
6	5.75	1.70	26	24.93	7.38	46	44.11	13.06	66	63.28	18.74	86	82.46	24.43
7	6.71	1.99	27	25.89	7.67	47	45.06	13.35	67	64.24	19.03	87	83.42	24.71
8	7.67	2.27	28	26.85	7.95	48	46.02	13.63	68	65.20	19.31	88	84.38	24.99
9	8.63	2.56	29	27.81	8.24	49	46.98	13.92	69	66.16	19.60	89	85.33	25.28
10	9.59	2.84	30	28.76	8.52	50	47.94	14.20	70	67.12	19.88	90	86.29	25.56
11	10.55	3.12	31	29.72	8.80	51	48.90	14.48	71	68.08	20.17	91	87.25	25.85
12	11.51	3.41	32	30.68	9.09	52	49.86	14.77	72	69.03	20.45	92	88.21	26.13
13	12.46	3.69	33	31.64	9.37	53	50.82	15.05	73	69.99	20.73	93	89.17	26.41
14	13.42	3.98	34	32.60	9.66	54	51.78	15.34	74	70.95	21.02	94	90.13	26.70
15	14.38	4.26	35	33.56	9.94	55	52.74	15.62	75	71.91	21.30	95	91.09	26.98
16	15.34	4.54	36	34.52	10.22	56	53.69	15.90	76	72.87	21.59	96	92.05	27.27
17	16.30	4.83	37	35.48	10.51	57	54.65	16.19	77	73.83	21.87	97	93.01	27.55
18	17.26	5.11	38	36.44	10.79	58	55.61	16.47	78	74.79	22.15	98	93.96	27.83
19	18.22	5.40	39	37.39	11.08	59	56.57	16.76	79	75.75	22.44	99	94.92	28.72
20	19.18	5.68	40	38.35	11.36	60	57.53	17.04	80	76.71	22.72	100	95.88	28.40
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

73 $\frac{1}{2}$ DEGREES

163 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.
1	0.96	0.29	21	20.11	6.05	41	39.26	11.82	61	58.41	17.58	81	77.56	23.34
2	1.92	0.58	22	21.07	6.34	42	40.22	12.10	62	59.37	17.87	82	78.52	23.63
3	2.87	0.86	23	22.02	6.63	43	41.18	12.39	63	60.33	18.16	83	79.48	23.92
4	3.83	1.15	24	22.98	6.92	44	42.13	12.68	64	61.28	18.44	84	80.44	24.21
5	4.79	1.44	25	23.94	7.20	45	43.09	12.97	65	62.24	18.73	85	81.39	24.50
6	5.75	1.73	26	24.90	7.49	46	44.05	13.26	66	63.20	19.02	86	82.35	24.78
7	6.70	2.02	27	25.85	7.78	47	45.01	13.55	67	64.16	19.31	87	83.31	25.07
8	7.66	2.31	28	26.81	8.07	48	45.96	13.83	68	65.11	19.60	88	84.27	25.36
9	8.62	2.59	29	27.77	8.36	49	46.92	14.12	69	66.07	19.89	89	85.22	25.65
10	9.58	2.88	30	28.73	8.65	50	47.88	14.41	70	67.03	20.17	90	86.18	25.94
11	10.53	3.17	31	29.68	8.93	51	48.84	14.70	71	67.99	20.46	91	87.14	26.23
12	11.49	3.46	32	30.64	9.22	52	49.79	14.99	72	68.95	20.75	92	88.10	26.51
13	12.45	3.75	33	31.60	9.51	53	50.75	15.27	73	69.90	21.04	93	89.05	26.80
14	13.41	4.03	34	32.56	9.80	54	51.71	15.56	74	70.86	21.33	94	90.01	27.09
15	14.36	4.32	35	33.51	10.09	55	52.67	15.85	75	71.82	21.61	95	90.97	27.38
16	15.32	4.61	36	34.47	10.38	56	53.62	16.14	76	72.78	21.90	96	91.93	27.67
17	16.28	4.90	37	35.43	10.66	57	54.58	16.43	77	73.73	22.19	97	92.88	27.95
18	17.24	5.19	38	36.39	10.95	58	55.54	16.72	78	74.69	22.48	98	93.84	28.24
19	18.19	5.48	39	37.35	11.24	59	56.50	17.00	79	75.65	22.77	99	94.80	28.53
20	19.15	5.76	40	38.30	11.53	60	57.45	17.29	80	76.61	23.06	100	95.76	28.82
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

73 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.
1	0.96	0.29	21	20.08	6.14	41	39.21	11.99	61	58.33	17.83	81	77.46	23.68
2	1.91	0.58	22	21.04	6.43	42	40.16	12.28	62	59.29	18.13	82	78.42	23.97
3	2.87	0.88	23	21.99	6.72	43	41.12	12.57	63	60.25	18.42	83	79.37	24.27
4	3.83	1.17	24	22.95	7.02	44	42.08	12.86	64	61.20	18.71	84	80.33	24.56
5	4.78	1.46	25	23.91	7.31	45	43.03	13.16	65	62.16	19.00	85	81.29	24.85
6	5.74	1.75	26	24.86	7.60	46	43.99	13.45	66	63.12	19.30	86	82.24	25.14
7	6.69	2.05	27	25.82	7.89	47	44.95	13.74	67	64.07	19.59	87	83.20	25.44
8	7.65	2.34	28	26.78	8.19	48	45.90	14.03	68	65.03	19.88	88	84.15	25.73
9	8.61	2.63	29	27.73	8.48	49	46.86	14.33	69	65.99	20.17	89	85.11	26.02
10	9.56	2.92	30	28.69	8.77	50	47.82	14.62	70	66.94	20.47	90	86.07	26.31
11	10.52	3.22	31	29.65	9.06	51	48.77	14.91	71	67.90	20.76	91	87.02	26.61
12	11.48	3.51	32	30.60	9.36	52	49.73	15.20	72	68.85	21.05	92	87.98	26.90
13	12.43	3.80	33	31.56	9.65	53	50.68	15.50	73	69.81	21.34	93	88.94	27.19
14	13.39	4.09	34	32.51	9.94	54	51.64	15.79	74	70.77	21.64	94	89.89	27.48
15	14.34	4.39	35	33.47	10.23	55	52.60	16.08	75	71.72	21.93	95	90.85	27.78
16	15.30	4.68	36	34.43	10.53	56	53.55	16.37	76	72.68	22.22	96	91.81	28.07
17	16.26	4.97	37	35.38	10.82	57	54.51	16.67	77	73.64	22.51	97	92.76	28.36
18	17.21	5.26	38	36.34	11.11	58	55.47	16.96	78	74.59	22.80	98	93.72	28.65
19	18.17	5.55	39	37.30	11.40	59	56.42	17.25	79	75.55	23.10	99	94.67	28.94
20	19.13	5.85	40	38.25	11.69	60	57.38	17.54	80	76.50	23.39	100	95.63	29.24
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

73 DEGREES

TRAVERSE TABLE

17½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.95	0.30	21	20.06	6.23	41	39.16	12.16	61	58.26	18.09	81	77.36	24.02
2	1.91	0.59	22	21.01	6.52	42	40.11	12.45	62	59.21	18.39	82	78.31	24.32
3	2.87	0.89	23	21.97	6.82	43	41.07	12.75	63	60.17	18.68	83	79.27	24.61
4	3.82	1.19	24	22.92	7.12	44	42.02	13.05	64	61.12	18.98	84	80.22	24.91
5	4.78	1.48	25	23.88	7.41	45	42.98	13.34	65	62.08	19.28	85	81.18	25.21
6	5.73	1.78	26	24.83	7.71	46	43.93	13.64	66	63.03	19.57	86	82.13	25.50
7	6.69	2.08	27	25.79	8.01	47	44.89	13.94	67	63.99	19.87	87	83.09	25.80
8	7.64	2.37	28	26.74	8.30	48	45.84	14.23	68	64.94	20.16	88	84.04	26.10
9	8.60	2.67	29	27.70	8.60	49	46.80	14.53	69	65.90	20.46	89	85.00	26.39
10	9.55	2.97	30	28.65	8.90	50	47.75	14.83	70	66.85	20.76	90	85.95	26.69
11	10.51	3.26	31	29.61	9.19	51	48.71	15.12	71	67.81	21.05	91	86.91	26.99
12	11.46	3.56	32	30.56	9.49	52	49.66	15.42	72	68.76	21.35	92	87.86	27.28
13	12.42	3.85	33	31.52	9.79	53	50.62	15.72	73	69.72	21.65	93	88.82	27.58
14	13.37	4.15	34	32.47	10.08	54	51.57	16.01	74	70.67	21.94	94	89.77	27.87
15	14.33	4.45	35	33.43	10.38	55	52.53	16.31	75	71.63	22.24	95	90.73	28.17
16	15.28	4.74	36	34.38	10.68	56	53.48	16.61	76	72.58	22.54	96	91.68	28.47
17	16.24	5.04	37	35.34	10.97	57	54.44	16.90	77	73.54	22.83	97	92.64	28.76
18	17.19	5.34	38	36.29	11.27	58	55.39	17.20	78	74.49	23.13	98	93.59	29.06
19	18.15	5.63	39	37.25	11.57	59	56.35	17.50	79	75.45	23.43	99	94.55	29.36
20	19.10	5.93	40	38.20	11.86	60	57.30	17.79	80	76.40	23.72	100	95.50	29.65
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

72¾ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.95	0.30	21	20.03	6.31	41	39.10	12.33	61	58.18	18.34	81	77.25	24.36
2	1.91	0.60	22	20.98	6.62	42	40.06	12.63	62	59.13	18.64	82	78.20	24.66
3	2.86	0.90	23	21.94	6.92	43	41.01	12.93	63	60.08	18.94	83	79.16	24.96
4	3.81	1.20	24	22.89	7.22	44	41.96	13.23	64	61.04	19.25	84	80.11	25.26
5	4.77	1.50	25	23.84	7.52	45	42.92	13.53	65	61.99	19.55	85	81.07	25.56
6	5.72	1.80	26	24.80	7.82	46	43.87	13.83	66	62.95	19.85	86	82.02	25.86
7	6.68	2.10	27	25.75	8.12	47	44.82	14.13	67	63.90	20.15	87	82.97	26.16
8	7.63	2.41	28	26.70	8.42	48	45.78	14.43	68	64.85	20.45	88	83.93	26.46
9	8.58	2.71	29	27.66	8.72	49	46.73	14.73	69	65.81	20.75	89	84.88	26.76
10	9.54	3.01	30	28.61	9.02	50	47.69	15.04	70	66.76	21.05	90	85.83	27.06
11	10.49	3.31	31	29.57	9.32	51	48.64	15.34	71	67.71	21.35	91	86.79	27.36
12	11.44	3.61	32	30.52	9.62	52	49.59	15.64	72	68.67	21.65	92	87.74	27.66
13	12.40	3.91	33	31.47	9.92	53	50.55	15.94	73	69.62	21.95	93	88.70	27.97
14	13.35	4.21	34	32.43	10.22	54	51.50	16.24	74	70.58	22.25	94	89.65	28.27
15	14.31	4.51	35	33.38	10.52	55	52.45	16.54	75	71.53	22.55	95	90.60	28.57
16	15.26	4.81	36	34.33	10.83	56	53.41	16.84	76	72.48	22.85	96	91.56	28.87
17	16.21	5.11	37	35.29	11.13	57	54.36	17.14	77	73.44	23.15	97	92.51	29.17
18	17.17	5.41	38	36.24	11.43	58	55.32	17.44	78	74.39	23.46	98	93.46	29.47
19	18.12	5.71	39	37.19	11.73	59	56.27	17.74	79	75.34	23.76	99	94.42	29.77
20	19.07	6.01	40	38.15	12.03	60	57.22	18.04	80	76.30	24.06	100	95.37	30.07
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

72½ DEGREES

TRAVERSE TABLE

65

1734 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.95	0.30	21	20.00	6.40	41	39.05	12.50	61	58.10	18.60	81	77.14	24.69
2	1.90	0.61	22	20.95	6.71	42	40.00	12.80	62	59.05	18.90	82	78.10	25.00
3	2.86	0.91	23	21.91	7.01	43	40.95	13.11	63	60.00	19.21	83	79.05	25.30
4	3.81	1.22	24	22.86	7.32	44	41.91	13.41	64	60.95	19.51	84	80.00	25.61
5	4.76	1.52	25	23.81	7.62	45	42.86	13.72	65	61.91	19.82	85	80.95	25.91
6	5.71	1.83	26	24.76	7.93	46	43.81	14.02	66	62.86	20.12	86	81.91	26.22
7	6.67	2.13	27	25.71	8.23	47	44.76	14.33	67	63.81	20.43	87	82.86	26.52
8	7.62	2.44	28	26.67	8.54	48	45.71	14.63	68	64.76	20.73	88	83.81	26.83
9	8.57	2.74	29	27.62	8.84	49	46.67	14.94	69	65.72	21.04	89	84.76	27.13
10	9.52	3.05	30	28.57	9.15	50	47.62	15.24	70	66.67	21.34	90	85.72	27.44
11	10.48	3.35	31	29.52	9.45	51	48.57	15.55	71	67.62	21.65	91	86.67	27.74
12	11.43	3.66	32	30.48	9.76	52	49.52	15.85	72	68.57	21.95	92	87.62	28.05
13	12.38	3.96	33	31.43	10.06	53	50.48	16.16	73	69.52	22.26	93	88.57	28.35
14	13.33	4.27	34	32.38	10.37	54	51.43	16.46	74	70.48	22.56	94	89.53	28.66
15	14.29	4.57	35	33.33	10.67	55	52.38	16.77	75	71.43	22.86	95	90.48	28.96
16	15.24	4.88	36	34.29	10.98	56	53.33	17.07	76	72.38	23.17	96	91.43	29.27
17	16.19	5.18	37	35.24	11.28	57	54.29	17.38	77	73.33	23.47	97	92.38	29.57
18	17.14	5.49	38	36.19	11.58	58	55.24	17.68	78	74.29	23.78	98	93.33	29.88
19	18.10	5.79	39	37.14	11.89	59	56.19	17.99	79	75.24	24.08	99	94.29	30.18
20	19.05	6.10	40	38.10	12.19	60	57.14	18.29	80	76.19	24.39	100	95.24	30.49
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

72 1/4 DEGREES

18 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.95	0.31	21	19.97	6.49	41	38.99	12.67	61	58.01	18.85	81	77.04	25.03
2	1.90	0.62	22	20.92	6.80	42	39.94	12.98	62	58.97	19.16	82	77.99	25.34
3	2.85	0.93	23	21.87	7.11	43	40.90	13.29	63	59.92	19.47	83	78.94	25.65
4	3.80	1.24	24	22.83	7.42	44	41.85	13.60	64	60.87	19.78	84	79.89	25.96
5	4.76	1.55	25	23.78	7.73	45	42.80	13.91	65	61.82	20.09	85	80.84	26.27
6	5.71	1.85	26	24.73	8.03	46	43.75	14.21	66	62.77	20.40	86	81.79	26.58
7	6.66	2.16	27	25.68	8.34	47	44.70	14.52	67	63.72	20.70	87	82.74	26.88
8	7.61	2.47	28	26.63	8.65	48	45.65	14.83	68	64.67	21.01	88	83.69	27.19
9	8.56	2.78	29	27.58	8.96	49	46.60	15.14	69	65.62	21.32	89	84.64	27.50
10	9.51	3.09	30	28.53	9.27	50	47.55	15.45	70	66.57	21.63	90	85.60	27.81
11	10.46	3.40	31	29.48	9.58	51	48.50	15.76	71	67.53	21.94	91	86.55	28.12
12	11.41	3.71	32	30.43	9.89	52	49.45	16.07	72	68.48	22.25	92	87.50	28.43
13	12.36	4.02	33	31.38	10.20	53	50.41	16.38	73	69.43	22.56	93	88.45	28.74
14	13.31	4.33	34	32.34	10.51	54	51.36	16.69	74	70.38	22.87	94	89.40	29.05
15	14.27	4.64	35	33.29	10.82	55	52.31	17.00	75	71.33	23.18	95	90.35	29.36
16	15.22	4.94	36	34.24	11.12	56	53.26	17.30	76	72.28	23.49	96	91.30	29.67
17	16.17	5.25	37	35.19	11.43	57	54.21	17.61	77	73.23	23.79	97	92.25	29.97
18	17.12	5.56	38	36.14	11.74	58	55.16	17.92	78	74.18	24.10	98	93.20	30.28
19	18.07	5.87	39	37.09	12.05	59	56.11	18.23	79	75.13	24.41	99	94.15	30.59
20	19.02	6.18	40	38.04	12.36	60	57.06	18.54	80	76.08	24.72	100	95.11	30.90
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

72 DEGREES

TRAVERSE TABLE

18½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.95	0.31	21	19.94	6.58	41	38.94	12.84	61	57.93	19.10	81	76.93	25.37
2	1.90	0.63	22	20.89	6.89	42	39.89	13.15	62	58.88	19.42	82	77.88	25.68
3	2.85	0.94	23	21.84	7.20	43	40.84	13.47	63	59.83	19.73	83	78.83	25.99
4	3.80	1.25	24	22.79	7.52	44	41.79	13.78	64	60.78	20.04	84	79.77	26.31
5	4.75	1.57	25	23.74	7.83	45	42.74	14.09	65	61.73	20.36	85	80.72	26.62
6	5.70	1.88	26	24.69	8.14	46	43.69	14.41	66	62.68	20.67	86	81.67	26.93
7	6.65	2.19	27	25.64	8.46	47	44.64	14.72	67	63.63	20.98	87	82.62	27.25
8	7.60	2.51	28	26.59	8.77	48	45.59	15.03	68	64.58	21.30	88	83.57	27.56
9	8.55	2.82	29	27.54	9.08	49	46.54	15.35	69	65.53	21.61	89	84.52	27.87
10	9.50	3.13	30	28.49	9.39	50	47.48	15.66	70	66.48	21.92	90	85.47	28.18
11	10.45	3.44	31	29.44	9.71	51	48.43	15.97	71	67.43	22.23	91	86.42	28.50
12	11.40	3.76	32	30.39	10.02	52	49.38	16.28	72	68.38	22.55	92	87.37	28.81
13	12.35	4.07	33	31.34	10.33	53	50.33	16.60	73	69.33	22.86	93	88.32	29.12
14	13.30	4.38	34	32.29	10.65	54	51.28	16.91	74	70.28	23.17	94	89.27	29.44
15	14.25	4.70	35	33.24	10.96	55	52.23	17.22	75	71.23	23.49	95	90.22	29.75
16	15.20	5.01	36	34.19	11.27	56	53.18	17.54	76	72.18	23.80	96	91.17	30.06
17	16.14	5.32	37	35.14	11.59	57	54.13	17.85	77	73.13	24.11	97	92.12	30.38
18	17.09	5.64	38	36.09	11.90	58	55.08	18.16	78	74.08	24.43	98	93.07	30.69
19	18.04	5.95	39	37.04	12.21	59	56.03	18.48	79	75.03	24.74	99	94.02	31.00
20	18.99	6.26	40	37.99	12.53	60	56.98	18.79	80	75.98	25.05	100	94.97	31.32
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

71¾ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.95	0.32	21	19.91	6.66	41	38.88	13.01	61	57.85	19.36	81	76.81	25.70
2	1.90	0.63	22	20.86	6.98	42	39.83	13.33	62	58.80	19.67	82	77.76	26.02
3	2.84	0.95	23	21.81	7.30	43	40.78	13.64	63	59.74	19.99	83	78.71	26.34
4	3.79	1.27	24	22.76	7.62	44	41.73	13.96	64	60.69	20.31	84	79.66	26.65
5	4.74	1.59	25	23.71	7.93	45	42.67	14.28	65	61.64	20.62	85	80.61	26.97
6	5.69	1.90	26	24.66	8.25	46	43.62	14.60	66	62.59	20.94	86	81.56	27.29
7	6.64	2.22	27	25.60	8.57	47	44.57	14.91	67	63.54	21.26	87	82.50	27.61
8	7.59	2.54	28	26.55	8.88	48	45.52	15.23	68	64.49	21.58	88	83.45	27.92
9	8.53	2.86	29	27.50	9.20	49	46.47	15.55	69	65.43	21.89	89	84.40	28.24
10	9.48	3.17	30	28.45	9.52	50	47.42	15.87	70	66.38	22.21	90	85.35	28.56
11	10.43	3.49	31	29.40	9.84	51	48.36	16.18	71	67.33	22.53	91	86.30	28.87
12	11.38	3.81	32	30.35	10.15	52	49.31	16.50	72	68.28	22.85	92	87.25	29.19
13	12.33	4.12	33	31.29	10.47	53	50.26	16.82	73	69.23	23.16	93	88.19	29.51
14	13.28	4.44	34	32.24	10.79	54	51.21	17.13	74	70.18	23.48	94	89.14	29.83
15	14.22	4.76	35	33.19	11.11	55	52.16	17.45	75	71.12	23.80	95	90.09	30.14
16	15.17	5.08	36	34.14	11.42	56	53.11	17.77	76	72.07	24.12	96	91.04	30.46
17	16.12	5.39	37	35.09	11.74	57	54.05	18.09	77	73.02	24.43	97	91.99	30.78
18	17.07	5.71	38	36.04	12.06	58	55.00	18.40	78	73.97	24.75	98	92.94	31.10
19	18.02	6.03	39	36.98	12.37	59	55.95	18.72	79	74.92	25.07	99	93.88	31.41
20	18.97	6.35	40	37.93	12.69	60	56.90	19.04	80	75.87	25.38	100	94.83	31.73
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

71½ DEGREES

TRAVERSE TABLE

67

18 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.
1	0.95	0.32	21	19.89	6.75	41	38.82	13.18	61	57.76	19.61	81	76.70	26.04
2	1.89	0.64	22	20.83	7.07	42	39.77	13.50	62	58.71	19.93	82	77.65	26.36
3	2.84	0.96	23	21.78	7.39	43	40.72	13.82	63	59.66	20.25	83	78.60	26.68
4	3.79	1.29	24	22.73	7.71	44	41.66	14.14	64	60.60	20.57	84	79.54	27.00
5	4.73	1.61	25	23.67	8.04	45	42.61	14.46	65	61.55	20.89	85	80.49	27.32
6	5.68	1.93	26	24.62	8.36	46	43.56	14.79	66	62.50	21.22	86	81.44	27.64
7	6.63	2.25	27	25.57	8.68	47	44.51	15.11	67	63.44	21.54	87	82.38	27.97
8	7.58	2.57	28	26.51	9.00	48	45.45	15.43	68	64.39	21.86	88	83.33	28.29
9	8.52	2.89	29	27.46	9.32	49	46.40	15.75	69	65.34	22.18	89	84.28	28.61
10	9.47	3.21	30	28.41	9.64	50	47.35	16.07	70	66.29	22.50	90	85.22	28.93
11	10.42	3.54	31	29.35	9.96	51	48.29	16.39	71	67.23	22.82	91	86.17	29.25
12	11.36	3.86	32	30.30	10.29	52	49.24	16.71	72	68.18	23.14	92	87.12	29.57
13	12.31	4.18	33	31.25	10.61	53	50.19	17.04	73	69.13	23.47	93	88.06	29.89
14	13.26	4.50	34	32.20	10.93	54	51.13	17.36	74	70.07	23.79	94	89.01	30.22
15	14.20	4.82	35	33.14	11.25	55	52.08	17.68	75	71.02	24.11	95	89.96	30.54
16	15.15	5.14	36	34.09	11.57	56	53.03	18.00	76	71.97	24.43	96	90.91	30.86
17	16.10	5.46	37	35.04	11.89	57	53.98	18.32	77	72.91	24.75	97	91.85	31.18
18	17.04	5.79	38	35.98	12.21	58	54.92	18.64	78	73.86	25.07	98	92.80	31.50
19	17.99	6.11	39	36.93	12.54	59	55.87	18.96	79	74.81	25.39	99	93.75	31.82
20	18.94	6.43	40	37.88	12.86	60	56.82	19.29	80	75.75	25.72	100	94.69	32.14
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

71 $\frac{1}{4}$ DEGREES

19 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.
1	0.95	0.33	21	19.86	6.84	41	38.77	13.35	61	57.68	19.86	81	76.59	26.37
2	1.89	0.65	22	20.80	7.16	42	39.71	13.67	62	58.62	20.19	82	77.53	26.70
3	2.84	0.98	23	21.75	7.49	43	40.66	14.00	63	59.57	20.51	83	78.48	27.02
4	3.78	1.30	24	22.69	7.81	44	41.60	14.32	64	60.51	20.84	84	79.42	27.35
5	4.73	1.63	25	23.64	8.14	45	42.55	14.65	65	61.46	21.16	85	80.37	27.67
6	5.67	1.95	26	24.58	8.46	46	43.49	14.98	66	62.40	21.49	86	81.31	28.00
7	6.62	2.28	27	25.53	8.79	47	44.44	15.30	67	63.35	21.81	87	82.26	28.32
8	7.56	2.60	28	26.47	9.12	48	45.38	15.63	68	64.30	22.14	88	83.21	28.65
9	8.51	2.93	29	27.42	9.44	49	46.33	15.95	69	65.24	22.46	89	84.15	28.98
10	9.46	3.26	30	28.37	9.77	50	47.28	16.28	70	66.19	22.79	90	85.10	29.30
11	10.40	3.58	31	29.31	10.09	51	48.22	16.60	71	67.13	23.12	91	86.04	29.63
12	11.35	3.91	32	30.26	10.42	52	49.17	16.93	72	68.08	23.44	92	86.99	29.95
13	12.29	4.23	33	31.20	10.74	53	50.11	17.26	73	69.02	23.77	93	87.93	30.28
14	13.24	4.56	34	32.15	11.07	54	51.06	17.58	74	69.97	24.09	94	88.88	30.60
15	14.18	4.88	35	33.09	11.39	55	52.00	17.91	75	70.91	24.42	95	89.82	30.93
16	15.13	5.21	36	34.04	11.72	56	52.95	18.23	76	71.86	24.74	96	90.77	31.25
17	16.07	5.53	37	34.98	12.05	57	53.89	18.56	77	72.80	25.07	97	91.72	31.58
18	17.02	5.86	38	35.93	12.37	58	54.84	18.88	78	73.75	25.39	98	92.66	31.91
19	17.96	6.19	39	36.88	12.70	59	55.79	19.21	79	74.70	25.72	99	93.61	32.23
20	18.91	6.51	40	37.82	13.02	60	56.73	19.53	80	75.64	26.05	100	94.55	32.56
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

71 DEGREES

TRAVERSE TABLE

19 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.94	0.33	21	19.83	6.92	41	38.71	13.52	61	57.59	20.11	81	76.47	26.70
2	1.89	0.66	22	20.77	7.25	42	39.65	13.85	62	58.53	20.44	82	77.42	27.03
3	2.83	0.99	23	21.71	7.58	43	40.60	14.18	63	59.48	20.77	83	78.36	27.36
4	3.78	1.32	24	22.66	7.91	44	41.54	14.51	64	60.42	21.10	84	79.30	27.69
5	4.72	1.65	25	23.60	8.24	45	42.48	14.84	65	61.37	21.43	85	80.25	28.02
6	5.66	1.98	26	24.55	8.57	46	43.43	15.17	66	62.31	21.76	86	81.19	28.35
7	6.61	2.31	27	25.49	8.90	47	44.37	15.50	67	63.25	22.09	87	82.14	28.68
8	7.55	2.64	28	26.43	9.23	48	45.32	15.83	68	64.20	22.42	88	83.08	29.01
9	8.50	2.97	29	27.38	9.56	49	46.26	16.15	69	65.14	22.75	89	84.02	29.34
10	9.44	3.30	30	28.32	9.89	50	47.20	16.48	70	66.09	23.08	90	84.97	29.67
11	10.38	3.63	31	29.27	10.22	51	48.15	16.81	71	67.03	23.41	91	85.91	30.00
12	11.33	3.96	32	30.21	10.55	52	49.09	17.14	72	67.97	23.74	92	86.86	30.33
13	12.27	4.29	33	31.15	10.88	53	50.04	17.47	73	68.92	24.07	93	87.80	30.66
14	13.22	4.62	34	32.10	11.21	54	50.98	17.80	74	69.86	24.40	94	88.74	30.99
15	14.16	4.95	35	33.04	11.54	55	51.92	18.13	75	70.81	24.73	95	89.69	31.32
16	15.11	5.28	36	33.99	11.87	56	52.87	18.46	76	71.75	25.06	96	90.63	31.65
17	16.05	5.60	37	34.93	12.20	57	53.81	18.79	77	72.69	25.39	97	91.58	31.98
18	16.99	5.93	38	35.88	12.53	58	54.76	19.12	78	73.64	25.72	98	92.52	32.31
19	17.94	6.26	39	36.82	12.86	59	55.70	19.45	79	74.58	26.05	99	93.46	32.64
20	18.88	6.59	40	37.76	13.19	60	56.65	19.78	80	75.53	26.38	100	94.41	32.97
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

70 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.94	0.33	21	19.80	7.01	41	38.65	13.69	61	57.50	20.36	81	76.35	27.04
2	1.89	0.67	22	20.74	7.34	42	39.59	14.02	62	58.44	20.70	82	77.30	27.37
3	2.83	1.00	23	21.68	7.68	43	40.53	14.35	63	59.39	21.03	83	78.24	27.71
4	3.77	1.34	24	22.62	8.01	44	41.48	14.69	64	60.33	21.36	84	79.18	28.04
5	4.71	1.67	25	23.57	8.35	45	42.42	15.02	65	61.27	21.70	85	80.12	28.37
6	5.66	2.00	26	24.51	8.68	46	43.36	15.36	66	62.21	22.03	86	81.07	28.71
7	6.60	2.34	27	25.45	9.01	47	44.30	15.69	67	63.16	22.37	87	82.01	29.04
8	7.54	2.67	28	26.39	9.35	48	45.25	16.02	68	64.10	22.70	88	82.95	29.37
9	8.48	3.00	29	27.34	9.68	49	46.19	16.36	69	65.04	23.03	89	83.90	29.71
10	9.43	3.34	30	28.28	10.01	50	47.13	16.69	70	65.98	23.37	90	84.84	30.04
11	10.37	3.67	31	29.22	10.35	51	48.07	17.02	71	66.93	23.70	91	85.78	30.38
12	11.31	4.01	32	30.16	10.68	52	49.02	17.36	72	67.87	24.03	92	86.72	30.71
13	12.25	4.34	33	31.11	11.02	53	49.96	17.69	73	68.81	24.37	93	87.67	31.04
14	13.20	4.67	34	32.05	11.35	54	50.90	18.03	74	69.76	24.70	94	88.61	31.38
15	14.14	5.01	35	32.99	11.68	55	51.85	18.36	75	70.70	25.04	95	89.55	31.71
16	15.08	5.34	36	33.94	12.02	56	52.79	18.69	76	71.64	25.37	96	90.49	32.05
17	16.02	5.67	37	34.88	12.35	57	53.73	19.03	77	72.58	25.70	97	91.44	32.38
18	16.97	6.01	38	35.82	12.68	58	54.67	19.36	78	73.53	26.04	98	92.38	32.71
19	17.91	6.34	39	36.76	13.02	59	55.62	19.69	79	74.47	26.37	99	93.32	33.05
20	18.85	6.68	40	37.71	13.35	60	56.56	20.03	80	75.41	26.70	100	94.26	33.38
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

70 $\frac{1}{2}$ DEGREES

TRAVERSE TABLE

69

193/4 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.94	0.34	21	19.76	7.10	41	38.59	13.85	61	57.41	20.61	81	76.24	27.37
2	1.88	0.68	22	20.71	7.43	42	39.53	14.19	62	58.35	20.95	82	77.18	27.71
3	2.82	1.01	23	21.65	7.77	43	40.47	14.53	63	59.29	21.29	83	78.12	28.05
4	3.76	1.35	24	22.59	8.11	44	41.41	14.87	64	60.24	21.63	84	79.06	28.39
5	4.71	1.69	25	23.53	8.45	45	42.35	15.21	65	61.18	21.96	85	80.00	28.72
6	5.65	2.03	26	24.47	8.79	46	43.29	15.54	66	62.12	22.30	86	80.94	29.06
7	6.59	2.37	27	25.41	9.12	47	44.24	15.88	67	63.06	22.64	87	81.88	29.40
8	7.53	2.70	28	26.35	9.46	48	45.18	16.22	68	64.00	22.98	88	82.82	29.74
9	8.47	3.04	29	27.29	9.80	49	46.12	16.56	69	64.94	23.32	89	83.76	30.07
10	9.41	3.38	30	28.24	10.14	50	47.06	16.90	70	65.88	23.65	90	84.71	30.41
11	10.35	3.72	31	29.18	10.48	51	48.00	17.23	71	66.82	23.99	91	85.65	30.75
12	11.29	4.06	32	30.12	10.81	52	48.94	17.57	72	67.76	24.33	92	86.59	31.09
13	12.24	4.39	33	31.06	11.15	53	49.88	17.91	73	68.71	24.67	93	87.53	31.43
14	13.18	4.73	34	32.00	11.49	54	50.82	18.25	74	69.65	25.01	94	88.47	31.76
15	14.12	5.07	35	32.94	11.83	55	51.76	18.59	75	70.59	25.34	95	89.41	32.10
16	15.06	5.41	36	33.88	12.17	56	52.71	18.92	76	71.53	25.68	96	90.35	32.44
17	16.00	5.74	37	34.82	12.50	57	53.65	19.26	77	72.47	26.02	97	91.29	32.78
18	16.94	6.08	38	35.76	12.84	58	54.59	19.60	78	73.41	26.36	98	92.24	33.12
19	17.88	6.42	39	36.71	13.18	59	55.53	19.94	79	74.35	26.70	99	93.18	33.45
20	18.82	6.76	40	37.65	13.52	60	56.47	20.27	80	75.29	27.03	100	94.12	33.79

70 1/4 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.94	0.34	21	19.73	7.18	41	38.53	14.02	61	57.32	20.86	81	76.12	27.70
2	1.88	0.68	22	20.67	7.52	42	39.47	14.36	62	58.26	21.21	82	77.05	28.05
3	2.82	1.03	23	21.61	7.87	43	40.41	14.71	63	59.20	21.55	83	77.99	28.39
4	3.76	1.37	24	22.55	8.21	44	41.35	15.05	64	60.14	21.89	84	78.93	28.73
5	4.70	1.71	25	23.49	8.55	45	42.29	15.39	65	61.08	22.23	85	79.87	29.07
6	5.64	2.05	26	24.43	8.89	46	43.23	15.73	66	62.02	22.57	86	80.81	29.41
7	6.58	2.39	27	25.37	9.23	47	44.17	16.07	67	62.96	22.92	87	81.75	29.76
8	7.52	2.74	28	26.31	9.58	48	45.11	16.42	68	63.90	23.26	88	82.69	30.10
9	8.46	3.08	29	27.25	9.92	49	46.04	16.76	69	64.84	23.60	89	83.63	30.44
10	9.40	3.42	30	28.19	10.26	50	46.98	17.10	70	65.78	23.94	90	84.57	30.78
11	10.34	3.76	31	29.13	10.60	51	47.92	17.44	71	66.72	24.28	91	85.51	31.12
12	11.28	4.10	32	30.07	10.94	52	48.86	17.79	72	67.66	24.63	92	86.45	31.47
13	12.22	4.45	33	31.01	11.29	53	49.80	18.13	73	68.60	24.97	93	87.39	31.81
14	13.16	4.79	34	31.95	11.63	54	50.74	18.47	74	69.54	25.31	94	88.33	32.15
15	14.10	5.13	35	32.89	11.97	55	51.68	18.81	75	70.48	25.65	95	89.27	32.49
16	15.04	5.47	36	33.83	12.31	56	52.62	19.15	76	71.42	25.99	96	90.21	32.83
17	15.97	5.81	37	34.77	12.65	57	53.56	19.50	77	72.36	26.34	97	91.15	33.18
18	16.91	6.16	38	35.71	13.00	58	54.50	19.84	78	73.30	26.68	98	92.09	33.52
19	17.85	6.50	39	36.65	13.34	59	55.44	20.18	79	74.24	27.02	99	93.03	33.86
20	18.79	6.84	40	37.59	13.68	60	56.38	20.52	80	75.18	27.36	100	93.97	34.20

70 DEGREES

TRAVERSE TABLE

20 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.94	0.35	21	19.70	7.27	41	38.47	14.19	61	57.23	21.11	81	75.99	28.04
2	1.88	0.69	22	20.64	7.61	42	39.40	14.54	62	58.17	21.46	82	76.93	28.38
3	2.81	1.04	23	21.58	7.96	43	40.34	14.88	63	59.11	21.81	83	77.87	28.73
4	3.75	1.38	24	22.52	8.31	44	41.28	15.23	64	60.04	22.15	84	78.81	29.07
5	4.69	1.73	25	23.45	8.65	45	42.22	15.58	65	60.98	22.50	85	79.75	29.42
6	5.63	2.08	26	24.39	9.00	46	43.16	15.92	66	61.92	22.84	86	80.68	29.77
7	6.57	2.42	27	25.33	9.35	47	44.09	16.27	67	62.86	23.19	87	81.62	30.11
8	7.51	2.77	28	26.27	9.69	48	45.03	16.61	68	63.80	23.54	88	82.56	30.46
9	8.44	3.12	29	27.21	10.04	49	45.97	16.96	69	64.74	23.88	89	83.50	30.80
10	9.38	3.46	30	28.15	10.38	50	46.91	17.31	70	65.67	24.23	90	84.44	31.15
11	10.32	3.81	31	29.08	10.73	51	47.85	17.65	71	66.61	24.57	91	85.38	31.50
12	11.26	4.15	32	30.02	11.08	52	48.79	18.00	72	67.55	24.92	92	86.31	31.84
13	12.20	4.50	33	30.96	11.42	53	49.72	18.34	73	68.49	25.27	93	87.25	32.19
14	13.13	4.85	34	31.90	11.77	54	50.66	18.69	74	69.43	25.61	94	88.19	32.54
15	14.07	5.19	35	32.84	12.11	55	51.60	19.04	75	70.36	25.96	95	89.13	32.88
16	15.01	5.54	36	33.77	12.46	56	52.54	19.38	76	71.30	26.30	96	90.07	33.23
17	15.95	5.88	37	34.71	12.81	57	53.48	19.73	77	72.24	26.65	97	91.00	33.57
18	16.89	6.23	38	35.65	13.15	58	54.42	20.07	78	73.18	27.00	98	91.94	33.92
19	17.83	6.58	39	36.59	13.50	59	55.35	20.42	79	74.12	27.34	99	92.88	34.27
20	18.76	6.92	40	37.53	13.84	60	56.29	20.77	80	75.06	27.69	100	93.82	34.61
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

69 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.94	0.35	21	19.67	7.35	41	38.40	14.36	61	57.14	21.36	81	75.87	28.37
2	1.87	0.70	22	20.61	7.70	42	39.34	14.71	62	58.07	21.71	82	76.81	28.72
3	2.81	1.05	23	21.54	8.05	43	40.28	15.06	63	59.01	22.06	83	77.74	29.07
4	3.75	1.40	24	22.48	8.40	44	41.21	15.41	64	59.95	22.41	84	78.68	29.42
5	4.68	1.75	25	23.42	8.76	45	42.15	15.76	65	60.88	22.76	85	79.62	29.77
6	5.62	2.10	26	24.35	9.11	46	43.09	16.11	66	61.82	23.11	86	80.55	30.12
7	6.56	2.45	27	25.29	9.46	47	44.02	16.46	67	62.76	23.46	87	81.49	30.47
8	7.49	2.80	28	26.23	9.81	48	44.96	16.81	68	63.69	23.81	88	82.43	30.82
9	8.43	3.15	29	27.16	10.16	49	45.90	17.16	69	64.63	24.16	89	83.36	31.17
10	9.37	3.50	30	28.10	10.51	50	46.83	17.51	70	65.57	24.51	90	84.30	31.52
11	10.30	3.85	31	29.04	10.86	51	47.77	17.86	71	66.50	24.86	91	85.24	31.87
12	11.24	4.20	32	29.97	11.21	52	48.71	18.21	72	67.44	25.21	92	86.17	32.22
13	12.18	4.55	33	30.91	11.56	53	49.64	18.56	73	68.38	25.57	93	87.11	32.57
14	13.11	4.90	34	31.85	11.91	54	50.58	18.91	74	69.31	25.92	94	88.05	32.92
15	14.05	5.25	35	32.78	12.26	55	51.52	19.26	75	70.25	26.27	95	88.98	33.27
16	14.99	5.60	36	33.72	12.61	56	52.45	19.61	76	71.19	26.62	96	89.92	33.62
17	15.92	5.95	37	34.66	12.96	57	53.39	19.96	77	72.12	26.97	97	90.86	33.97
18	16.86	6.30	38	35.59	13.31	58	54.33	20.31	78	73.06	27.32	98	91.79	34.32
19	17.81	6.65	39	36.53	13.66	59	55.26	20.66	79	74.00	27.67	99	92.73	34.67
20	18.73	7.00	40	37.47	14.01	60	56.20	21.01	80	74.93	28.02	100	93.67	35.02
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

69 $\frac{1}{2}$ DEGREES

TRAVERSE TABLE

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2034 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.94	0.35	21	19.64	7.44	41	38.34	14.53	61	57.04	21.61	81	75.75	28.70
2	1.87	0.71	22	20.57	7.79	42	39.28	14.88	62	57.98	21.97	82	76.68	29.05
3	2.81	1.06	23	21.51	8.15	43	40.21	15.23	63	58.91	22.32	83	77.62	29.41
4	3.74	1.42	24	22.44	8.50	44	41.15	15.59	64	59.85	22.67	84	78.55	29.76
5	4.68	1.77	25	23.38	8.86	45	42.08	15.94	65	60.78	23.03	85	79.49	30.11
6	5.61	2.13	26	24.31	9.21	46	43.02	16.30	66	61.72	23.38	86	80.42	30.47
7	6.55	2.48	27	25.25	9.57	47	43.95	16.65	67	62.65	23.74	87	81.36	30.82
8	7.48	2.83	28	26.18	9.92	48	44.89	17.01	68	63.59	24.09	88	82.29	31.18
9	8.42	3.19	29	27.12	10.27	49	45.82	17.36	69	64.52	24.45	89	83.23	31.53
10	9.35	3.54	30	28.05	10.63	50	46.76	17.71	70	65.46	24.80	90	84.16	31.89
11	10.29	3.90	31	28.99	10.98	51	47.69	18.07	71	66.39	25.15	91	85.10	32.24
12	11.22	4.25	32	29.92	11.34	52	48.63	18.42	72	67.33	25.51	92	86.03	32.59
13	12.16	4.61	33	30.86	11.69	53	49.56	18.78	73	68.26	25.86	93	86.97	32.95
14	13.09	4.96	34	31.79	12.05	54	50.50	19.13	74	69.20	26.22	94	87.90	33.30
15	14.03	5.31	35	32.73	12.40	55	51.43	19.49	75	70.14	26.57	95	88.84	33.66
16	14.96	5.67	36	33.66	12.75	56	52.37	19.84	76	71.07	26.93	96	89.77	34.01
17	15.90	6.02	37	34.60	13.11	57	53.30	20.19	77	72.01	27.28	97	90.71	34.37
18	16.83	6.38	38	35.54	13.46	58	54.24	20.55	78	72.94	27.63	98	91.64	34.72
19	17.77	6.73	39	36.47	13.82	59	55.17	20.90	79	73.88	27.99	99	92.58	35.07
20	18.70	7.09	40	37.41	14.17	60	56.11	21.26	80	74.81	28.34	100	93.51	35.43
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

69 1/4 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.93	0.36	21	19.61	7.53	41	38.28	14.69	61	56.95	21.86	81	75.62	29.03
2	1.87	0.72	22	20.54	7.88	42	39.21	15.05	62	57.88	22.22	82	76.55	29.39
3	2.80	1.08	23	21.47	8.24	43	40.14	15.41	63	58.82	22.58	83	77.49	29.74
4	3.73	1.43	24	22.41	8.60	44	41.08	15.77	64	59.75	22.94	84	78.42	30.10
5	4.67	1.79	25	23.34	8.96	45	42.01	16.13	65	60.68	23.29	85	79.35	30.46
6	5.60	2.15	26	24.27	9.32	46	42.94	16.48	66	61.62	23.65	86	80.29	30.82
7	6.54	2.51	27	25.21	9.68	47	43.88	16.84	67	62.55	24.01	87	81.22	31.18
8	7.47	2.87	28	26.14	10.03	48	44.81	17.20	68	63.48	24.37	88	82.16	31.54
9	8.40	3.23	29	27.07	10.39	49	45.75	17.56	69	64.42	24.73	89	83.09	31.89
10	9.34	3.58	30	28.01	10.75	50	46.68	17.92	70	65.35	25.09	90	84.02	32.25
11	10.27	3.94	31	28.94	11.11	51	47.61	18.28	71	66.28	25.44	91	84.96	32.61
12	11.20	4.30	32	29.87	11.47	52	48.55	18.64	72	67.22	25.80	92	85.89	32.97
13	12.14	4.66	33	30.81	11.83	53	49.48	18.99	73	68.15	26.16	93	86.82	33.33
14	13.07	5.02	34	31.74	12.18	54	50.41	19.35	74	69.08	26.52	94	87.76	33.69
15	14.00	5.38	35	32.68	12.54	55	51.35	19.71	75	70.02	26.88	95	88.69	34.04
16	14.94	5.73	36	33.61	12.90	56	52.28	20.07	76	70.95	27.24	96	89.62	34.40
17	15.87	6.09	37	34.54	13.26	57	53.21	20.43	77	71.89	27.59	97	90.56	34.76
18	16.80	6.45	38	35.48	13.62	58	54.15	20.79	78	72.82	27.95	98	91.49	35.12
19	17.74	6.81	39	36.41	13.98	59	55.08	21.14	79	73.75	28.31	99	92.42	35.48
20	18.67	7.17	40	37.34	14.33	60	56.01	21.50	80	74.69	28.67	100	93.36	35.84
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

69 DEGREES

TRAVERSE TABLE

21½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.93	0.36	21	19.57	7.61	41	38.21	14.86	61	56.85	22.11	81	75.49	29.36
2	1.86	0.72	22	20.50	7.97	42	39.14	15.22	62	57.78	22.47	82	76.42	29.72
3	2.80	1.09	23	21.44	8.34	43	40.08	15.58	63	58.72	22.83	83	77.36	30.08
4	3.73	1.45	24	22.37	8.70	44	41.01	15.95	64	59.65	23.20	84	78.29	30.44
5	4.66	1.81	25	23.30	9.06	45	41.94	16.31	65	60.58	23.56	85	79.22	30.81
6	5.59	2.17	26	24.23	9.42	46	42.87	16.67	66	61.51	23.92	86	80.15	31.17
7	6.52	2.54	27	25.16	9.79	47	43.80	17.03	67	62.44	24.28	87	81.08	31.53
8	7.46	2.90	28	26.10	10.15	48	44.74	17.40	68	63.38	24.65	88	82.02	31.89
9	8.39	3.26	29	27.03	10.51	49	45.67	17.76	69	64.31	25.01	89	82.95	32.26
10	9.32	3.62	30	27.96	10.87	50	46.60	18.12	70	65.24	25.37	90	83.88	32.62
11	10.25	3.99	31	28.89	11.24	51	47.53	18.48	71	66.17	25.73	91	84.81	32.98
12	11.18	4.35	32	29.82	11.60	52	48.46	18.85	72	67.10	26.10	92	85.74	33.34
13	12.12	4.71	33	30.76	11.96	53	49.40	19.21	73	68.04	26.46	93	86.68	33.71
14	13.05	5.07	34	31.69	12.32	54	50.33	19.57	74	68.97	26.82	94	87.61	34.07
15	13.98	5.44	35	32.62	12.69	55	51.26	19.93	75	69.90	27.18	95	88.54	34.43
16	14.91	5.80	36	33.55	13.05	56	52.19	20.30	76	70.83	27.55	96	89.47	34.79
17	15.84	6.16	37	34.48	13.41	57	53.12	20.66	77	71.76	27.91	97	90.40	35.16
18	16.78	6.52	38	35.42	13.77	58	54.06	21.02	78	72.70	28.27	98	91.34	35.52
19	17.71	6.89	39	36.35	14.14	59	54.99	21.38	79	73.63	28.63	99	92.27	35.88
20	18.64	7.25	40	37.28	14.50	60	55.92	21.75	80	74.56	29.00	100	93.20	36.24
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

68¾ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.93	0.37	21	19.54	7.70	41	38.15	15.03	61	56.76	22.36	81	75.36	29.69
2	1.86	0.73	22	20.47	8.06	42	39.08	15.39	62	57.69	22.72	82	76.29	30.05
3	2.79	1.10	23	21.40	8.43	43	40.01	15.76	63	58.62	23.09	83	77.22	30.42
4	3.72	1.47	24	22.33	8.80	44	40.94	16.13	64	59.55	23.46	84	78.16	30.79
5	4.65	1.83	25	23.26	9.16	45	41.87	16.49	65	60.48	23.82	85	79.09	31.15
6	5.58	2.20	26	24.19	9.53	46	42.80	16.86	66	61.41	24.19	86	80.02	31.52
7	6.51	2.57	27	25.12	9.90	47	43.73	17.23	67	62.34	24.56	87	80.95	31.89
8	7.44	2.93	28	26.05	10.26	48	44.66	17.59	68	63.27	24.92	88	81.88	32.25
9	8.37	3.30	29	26.98	10.63	49	45.59	17.96	69	64.20	25.29	89	82.81	32.62
10	9.30	3.67	30	27.91	11.00	50	46.52	18.33	70	65.13	25.66	90	83.74	32.99
11	10.23	4.03	31	28.84	11.36	51	47.45	18.69	71	66.06	26.02	91	84.67	33.35
12	11.17	4.40	32	29.77	11.73	52	48.38	19.06	72	66.99	26.39	92	85.60	33.72
13	12.10	4.76	33	30.70	12.09	53	49.31	19.42	73	67.92	26.75	93	86.53	34.08
14	13.03	5.13	34	31.63	12.46	54	50.24	19.79	74	68.85	27.12	94	87.46	34.45
15	13.96	5.50	35	32.56	12.83	55	51.17	20.16	75	69.78	27.49	95	88.39	34.82
16	14.89	5.86	36	33.50	13.19	56	52.10	20.52	76	70.71	27.85	96	89.32	35.18
17	15.82	6.23	37	34.43	13.56	57	53.03	20.89	77	71.64	28.22	97	90.25	35.55
18	16.75	6.60	38	35.36	13.93	58	53.96	21.26	78	72.57	28.59	98	91.18	35.92
19	17.68	6.96	39	36.29	14.29	59	54.89	21.62	79	73.50	28.95	99	92.11	36.28
20	18.61	7.33	40	37.22	14.66	60	55.83	21.99	80	74.43	29.32	100	93.04	36.65
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

68½ DEGREES

TRAVERSE TABLE

73

21 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.93	0.37	21	19.50	7.78	41	38.08	15.19	61	56.66	22.60	81	75.23	30.02
2	1.86	0.74	22	20.43	8.15	42	39.01	15.56	62	57.59	22.97	82	76.16	30.39
3	2.79	1.11	23	21.36	8.52	43	39.94	15.93	63	58.52	23.35	83	77.09	30.76
4	3.72	1.48	24	22.29	8.89	44	40.87	16.30	64	59.44	23.72	84	78.02	31.13
5	4.64	1.85	25	23.22	9.26	45	41.80	16.68	65	60.37	24.09	85	78.95	31.50
6	5.57	2.22	26	24.15	9.63	46	42.73	17.05	66	61.30	24.46	86	79.88	31.87
7	6.50	2.59	27	25.08	10.01	47	43.65	17.42	67	62.23	24.83	87	80.81	32.24
8	7.43	2.96	28	26.01	10.38	48	44.58	17.79	68	63.16	25.20	88	81.74	32.61
9	8.36	3.34	29	26.94	10.75	49	45.51	18.16	69	64.09	25.57	89	82.66	32.98
10	9.29	3.71	30	27.86	11.12	50	46.44	18.53	70	65.02	25.94	90	83.59	33.35
11	10.22	4.08	31	28.79	11.49	51	47.37	18.90	71	65.95	26.31	91	84.52	33.72
12	11.15	4.45	32	29.72	11.86	52	48.30	19.27	72	66.87	26.68	92	85.45	34.09
13	12.07	4.82	33	30.65	12.23	53	49.23	19.64	73	67.80	27.05	93	86.38	34.46
14	13.00	5.19	34	31.58	12.60	54	50.16	20.01	74	68.73	27.42	94	87.31	34.83
15	13.93	5.56	35	32.51	12.97	55	51.08	20.38	75	69.66	27.79	95	88.24	35.20
16	14.86	5.93	36	33.44	13.34	56	52.01	20.75	76	70.59	28.16	96	89.17	35.57
17	15.79	6.30	37	34.37	13.71	57	52.94	21.12	77	71.52	28.53	97	90.09	35.94
18	16.72	6.67	38	35.29	14.08	58	53.87	21.49	78	72.45	28.90	98	91.02	36.31
19	17.65	7.04	39	36.22	14.45	59	54.80	21.86	79	73.38	29.27	99	91.95	36.69
20	18.58	7.41	40	37.15	14.82	60	55.73	22.23	80	74.30	29.64	100	92.88	37.06

Dist. Dep. Lat. Dist. Dep. Lat. Dist. Dep. Lat. Dist. Dep. Lat.

68 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.93	0.37	21	19.47	7.87	41	38.01	15.36	61	56.56	22.85	81	75.10	30.34
2	1.85	0.75	22	20.40	8.24	42	38.94	15.73	62	57.49	23.23	82	76.03	30.72
3	2.78	1.12	23	21.33	8.62	43	39.87	16.11	63	58.41	23.60	83	76.96	31.09
4	3.71	1.50	24	22.25	8.99	44	40.80	16.48	64	59.34	23.97	84	77.88	31.47
5	4.64	1.87	25	23.18	9.37	45	41.72	16.86	65	60.27	24.35	85	78.81	31.84
6	5.56	2.25	26	24.11	9.74	46	42.65	17.23	66	61.19	24.72	86	79.74	32.22
7	6.49	2.62	27	25.03	10.11	47	43.58	17.61	67	62.12	25.10	87	80.66	32.59
8	7.42	3.00	28	25.96	10.49	48	44.50	17.98	68	63.05	25.47	88	81.59	32.97
9	8.34	3.37	29	26.89	10.86	49	45.43	18.36	69	63.98	25.85	89	82.52	33.34
10	9.29	3.75	30	27.82	11.24	50	46.36	18.73	70	64.90	26.22	90	83.45	33.71
11	10.22	4.12	31	28.74	11.61	51	47.29	19.10	71	65.83	26.60	91	84.37	34.09
12	11.15	4.50	32	29.67	11.99	52	48.21	19.48	72	66.76	26.97	92	85.30	34.46
13	12.07	4.87	33	30.60	12.36	53	49.14	19.85	73	67.68	27.35	93	86.23	34.84
14	12.98	5.24	34	31.52	12.74	54	50.07	20.23	74	68.61	27.72	94	87.16	35.21
15	13.91	5.62	35	32.45	13.11	55	51.00	20.60	75	69.54	28.10	95	88.08	35.59
16	14.83	5.99	36	33.38	13.49	56	51.92	20.98	76	70.47	28.47	96	89.01	35.96
17	15.76	6.37	37	34.31	13.86	57	52.85	21.35	77	71.39	28.84	97	89.94	36.34
18	16.69	6.74	38	35.23	14.24	58	53.78	21.73	78	72.32	29.22	98	90.86	36.71
19	17.62	7.12	39	36.16	14.61	59	54.70	22.10	79	73.25	29.59	99	91.79	37.09
20	18.54	7.49	40	37.09	14.98	60	55.63	22.48	80	74.17	29.97	100	92.72	37.46

Dist. Dep. Lat. Dist. Dep. Lat. Dist. Dep. Lat. Dist. Dep. Lat.

68 DEGREES

TRAVERSE TABLE

22 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.93	0.38	21	19.44	7.95	41	37.95	15.52	61	56.47	23.10	81	74.97	30.67
2	1.86	0.76	22	20.36	8.33	42	38.87	15.90	62	57.38	23.48	82	75.89	31.05
3	2.78	1.14	23	21.29	8.71	43	39.80	16.28	63	58.31	28.85	83	76.82	31.43
4	3.70	1.51	24	22.21	9.09	44	40.72	16.66	64	59.23	24.23	84	77.75	31.81
5	4.63	1.89	25	23.14	9.47	45	41.65	17.04	65	60.16	24.61	85	78.67	32.19
6	5.55	2.27	26	24.06	9.84	46	42.57	17.42	66	61.09	24.99	86	79.60	32.56
7	6.48	2.65	27	24.99	10.22	47	43.50	17.80	67	62.01	25.37	87	80.52	32.94
8	7.40	3.03	28	25.92	10.60	48	44.43	18.18	68	62.94	25.75	88	81.45	33.32
9	8.33	3.41	29	26.84	10.98	49	45.35	18.55	69	63.86	26.13	89	82.37	33.70
10	9.26	3.79	30	27.77	11.36	50	46.28	18.93	70	64.79	26.51	90	83.30	34.08
11	10.18	4.17	31	28.69	11.74	51	47.20	19.31	71	65.71	26.88	91	84.22	34.46
12	11.11	4.54	32	29.62	12.12	52	48.13	19.69	72	66.64	27.26	92	85.15	34.84
13	12.03	4.92	33	30.54	12.50	53	49.05	20.07	73	67.56	27.64	93	86.08	35.21
14	12.96	5.30	34	31.47	12.87	54	49.98	20.45	74	68.49	28.02	94	87.00	35.59
15	13.88	5.68	35	32.39	13.25	55	50.90	20.83	75	69.42	28.40	95	87.93	35.97
16	14.81	6.06	36	33.32	13.63	56	51.83	21.20	76	70.34	28.78	96	88.85	36.35
17	15.73	6.44	37	34.24	14.01	57	52.76	21.58	77	71.27	29.16	97	89.78	36.73
18	16.66	6.82	38	35.17	14.39	58	53.68	21.96	78	72.19	29.53	98	90.70	37.11
19	17.59	7.19	39	36.10	14.77	59	54.61	22.34	79	73.12	29.91	99	91.63	37.49
20	18.51	7.57	40	37.02	15.15	60	55.53	22.72	80	74.04	30.29	100	92.55	37.86

67 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.92	0.38	21	19.40	8.04	41	37.88	15.69	61	56.36	23.34	81	74.83	31.00
2	1.85	0.77	22	20.33	8.42	42	38.80	16.07	62	57.28	23.73	82	75.76	31.38
3	2.77	1.15	23	21.25	8.80	43	39.73	16.46	63	58.20	24.11	83	76.68	31.76
4	3.70	1.53	24	22.17	9.18	44	40.65	16.84	64	59.13	24.49	84	77.61	32.15
5	4.62	1.91	25	23.10	9.57	45	41.57	17.22	65	60.05	24.87	85	78.53	32.53
6	5.54	2.30	26	24.02	9.95	46	42.50	17.60	66	60.98	25.26	86	79.45	32.91
7	6.47	2.68	27	24.94	10.33	47	43.42	17.99	67	61.90	25.64	87	80.38	33.29
8	7.39	3.06	28	25.87	10.72	48	44.35	18.37	68	62.82	26.02	88	81.30	33.68
9	8.31	3.44	29	26.79	11.10	49	45.27	18.75	69	63.75	26.41	89	82.23	34.06
10	9.24	3.83	30	27.72	11.48	50	46.19	19.13	70	64.67	26.79	90	83.15	34.44
11	10.16	4.21	31	28.64	11.86	51	47.12	19.52	71	65.60	27.17	91	84.07	34.82
12	11.09	4.59	32	29.56	12.25	52	48.04	19.90	72	66.52	27.55	92	85.00	35.21
13	12.01	4.97	33	30.49	12.63	53	48.97	20.28	73	67.44	27.94	93	85.92	35.59
14	12.93	5.36	34	31.41	13.01	54	49.89	20.66	74	68.37	28.32	94	86.84	35.97
15	13.86	5.74	35	32.34	13.39	55	50.81	21.05	75	69.29	28.70	95	87.77	36.35
16	14.78	6.12	36	33.26	13.78	56	51.74	21.43	76	70.21	29.08	96	88.69	36.74
17	15.71	6.51	37	34.18	14.16	57	52.66	21.81	77	71.14	29.47	97	89.62	37.12
18	16.63	6.89	38	35.11	14.54	58	53.59	22.20	78	72.06	29.85	98	90.54	37.50
19	17.55	7.27	39	36.03	14.92	59	54.51	22.58	79	72.99	30.23	99	91.46	37.89
20	18.48	7.65	40	36.96	15.31	60	55.43	22.96	80	73.91	30.61	100	92.39	38.27

67 $\frac{1}{2}$ DEGREES

TRAVERSE TABLE

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2234 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.92	0.39	21	19.37	8.12	41	37.81	15.86	61	56.25	23.59	81	74.70	31.32
2	1.84	0.77	22	20.29	8.51	42	38.73	16.24	62	57.18	23.98	82	75.62	31.71
3	2.77	1.16	23	21.21	8.89	43	39.65	16.63	63	58.10	24.36	83	76.54	32.10
4	3.69	1.55	24	22.13	9.28	44	40.58	17.02	64	59.02	24.75	84	77.46	32.48
5	4.61	1.93	25	23.05	9.67	45	41.50	17.40	65	59.94	25.14	85	78.39	32.87
6	5.53	2.32	26	23.98	10.05	46	42.42	17.79	66	60.87	25.52	86	79.31	33.26
7	6.46	2.71	27	24.90	10.44	47	43.34	18.18	67	61.79	25.91	87	80.23	33.64
8	7.38	3.09	28	25.82	10.83	48	44.27	18.56	68	62.71	26.30	88	81.15	34.03
9	8.30	3.48	29	26.74	11.21	49	45.19	18.95	69	63.63	26.68	89	82.08	34.42
10	9.22	3.87	30	27.67	11.60	50	46.11	19.34	70	64.55	27.07	90	83.00	34.80
11	10.14	4.25	31	28.59	11.99	51	47.03	19.72	71	65.48	27.46	91	83.92	35.19
12	11.07	4.64	32	29.51	12.37	52	47.95	20.11	72	66.40	27.84	92	84.84	35.58
13	11.99	5.03	33	30.43	12.76	53	48.88	20.50	73	67.32	28.23	93	85.76	35.96
14	12.91	5.41	34	31.35	13.15	54	49.80	20.88	74	68.24	28.62	94	86.69	36.35
15	13.83	5.80	35	32.28	13.53	55	50.72	21.27	75	69.17	29.00	95	87.61	36.74
16	14.76	6.19	36	33.20	13.92	56	51.64	21.66	76	70.09	29.39	96	88.53	37.12
17	15.68	6.57	37	34.12	14.31	57	52.57	22.04	77	71.01	29.78	97	89.45	37.51
18	16.60	6.96	38	35.04	14.70	58	53.49	22.43	78	71.93	30.16	98	90.38	37.90
19	17.52	7.35	39	35.97	15.08	59	54.41	22.82	79	72.85	30.55	99	91.30	38.28
20	18.44	7.73	40	36.89	15.47	60	55.33	23.20	80	73.78	30.94	100	92.22	38.67

67 1/4 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.92	0.39	21	19.33	8.21	41	37.74	16.02	61	56.15	23.83	81	74.56	31.65
2	1.84	0.78	22	20.25	8.60	42	38.66	16.41	62	57.07	24.23	82	75.48	32.04
3	2.76	1.17	23	21.17	8.99	43	39.58	16.80	63	57.99	24.62	83	76.40	32.43
4	3.68	1.56	24	22.09	9.38	44	40.50	17.19	64	58.91	25.01	84	77.32	32.82
5	4.60	1.95	25	23.01	9.77	45	41.42	17.58	65	59.83	25.40	85	78.24	33.21
6	5.52	2.34	26	23.93	10.16	46	42.34	17.97	66	60.75	25.79	86	79.16	33.60
7	6.44	2.73	27	24.85	10.55	47	43.26	18.36	67	61.67	26.18	87	80.08	33.99
8	7.36	3.12	28	25.77	10.94	48	44.18	18.76	68	62.59	26.57	88	81.00	34.38
9	8.28	3.52	29	26.69	11.33	49	45.10	19.15	69	63.51	26.96	89	81.92	34.78
10	9.20	3.91	30	27.62	11.72	50	46.03	19.54	70	64.44	27.35	90	82.85	35.17
11	10.13	4.30	31	28.54	12.11	51	46.95	19.93	71	65.36	27.74	91	83.77	35.56
12	11.05	4.69	32	29.46	12.50	52	47.87	20.32	72	66.28	28.13	92	84.69	35.95
13	11.97	5.08	33	30.38	12.89	53	48.79	20.71	73	67.20	28.52	93	85.61	36.34
14	12.89	5.47	34	31.30	13.28	54	49.71	21.10	74	68.12	28.91	94	86.53	36.73
15	13.81	5.86	35	32.22	13.68	55	50.63	21.49	75	69.04	29.30	95	87.45	37.12
16	14.73	6.25	36	33.14	14.07	56	51.55	21.88	76	69.96	29.70	96	88.37	37.51
17	15.65	6.64	37	34.06	14.46	57	52.47	22.27	77	70.88	30.09	97	89.29	37.90
18	16.57	7.03	38	34.98	14.85	58	53.39	22.66	78	71.80	30.48	98	90.21	38.29
19	17.49	7.42	39	35.90	15.24	59	54.31	23.05	79	72.72	30.87	99	91.13	38.68
20	18.41	7.81	40	36.82	15.63	60	55.23	23.44	80	73.64	31.26	100	92.05	39.07

67 DEGREES

TRAVERSE TABLE

23 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.92	0.39	21	19.29	8.29	41	37.67	16.18	61	56.05	24.08	81	74.42	31.97
2	1.84	0.79	22	20.21	8.68	42	38.59	16.58	62	56.97	24.47	82	75.34	32.37
3	2.76	1.18	23	21.13	9.08	43	39.51	16.97	63	57.88	24.87	83	76.26	32.76
4	3.68	1.58	24	22.05	9.47	44	40.43	17.37	64	58.80	25.26	84	77.18	33.16
5	4.59	1.97	25	22.97	9.87	45	41.35	17.76	65	59.72	25.66	85	78.10	33.55
6	5.51	2.37	26	23.89	10.26	46	42.26	18.16	66	60.64	26.05	86	79.02	33.95
7	6.43	2.76	27	24.81	10.66	47	43.18	18.55	67	61.56	26.45	87	79.93	34.34
8	7.35	3.16	28	25.73	11.05	48	44.10	18.95	68	62.48	26.84	88	80.85	34.74
9	8.27	3.55	29	26.64	11.45	49	45.02	19.34	69	63.40	27.24	89	81.77	35.13
10	9.19	3.95	30	27.56	11.84	50	45.94	19.74	70	64.32	27.63	90	82.69	35.53
11	10.11	4.34	31	28.48	12.24	51	46.86	20.13	71	65.23	28.03	91	83.61	35.92
12	11.03	4.74	32	29.40	12.63	52	47.78	20.53	72	66.15	28.42	92	84.53	36.32
13	11.94	5.13	33	30.32	13.03	53	48.70	20.92	73	67.07	28.82	93	85.45	36.71
14	12.86	5.53	34	31.24	13.42	54	49.61	21.32	74	67.99	29.21	94	86.37	37.11
15	13.78	5.92	35	32.16	13.82	55	50.53	21.71	75	68.91	29.61	95	87.29	37.50
16	14.70	6.32	36	33.08	14.21	56	51.45	22.11	76	69.83	30.00	96	88.20	37.90
17	15.62	6.71	37	34.00	14.61	57	52.37	22.50	77	70.75	30.40	97	89.12	38.29
18	16.54	7.11	38	34.91	15.00	58	53.29	22.90	78	71.67	30.79	98	90.04	38.68
19	17.46	7.50	39	35.83	15.39	59	54.21	23.29	79	72.58	31.18	99	90.96	39.08
20	18.38	7.89	40	36.75	15.79	60	55.13	23.68	80	73.50	31.58	100	91.88	39.47
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

66 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.92	0.40	21	19.26	8.37	41	37.60	16.35	61	55.94	24.32	81	74.28	32.30
2	1.83	0.80	22	20.18	8.77	42	38.52	16.75	62	56.86	24.72	82	75.20	32.70
3	2.75	1.20	23	21.09	9.17	43	39.43	17.15	63	57.77	25.12	83	76.12	33.10
4	3.67	1.59	24	22.01	9.57	44	40.35	17.54	64	58.69	25.52	84	77.03	33.49
5	4.59	1.99	25	22.93	9.97	45	41.27	17.94	65	59.61	25.92	85	77.95	33.89
6	5.50	2.39	26	23.84	10.37	46	42.18	18.34	66	60.53	26.32	86	78.87	34.29
7	6.42	2.79	27	24.76	10.77	47	43.10	18.74	67	61.44	26.72	87	79.78	34.69
8	7.34	3.19	28	25.68	11.16	48	44.02	19.14	68	62.36	27.11	88	80.70	35.09
9	8.25	3.59	29	26.60	11.56	49	44.94	19.54	69	63.28	27.51	89	81.62	35.49
10	9.17	3.99	30	27.51	11.96	50	45.85	19.94	70	64.19	27.91	90	82.54	35.89
11	10.09	4.39	31	28.43	12.36	51	46.77	20.34	71	65.11	28.31	91	83.45	36.29
12	11.00	4.78	32	29.35	12.76	52	47.69	20.73	72	66.03	28.71	92	84.37	36.68
13	11.92	5.18	33	30.26	13.16	53	48.60	21.13	73	66.95	29.11	93	85.29	37.08
14	12.84	5.58	34	31.18	13.55	54	49.52	21.53	74	67.86	29.51	94	86.20	37.48
15	13.76	5.98	35	32.10	13.96	55	50.44	21.93	75	68.78	29.91	95	87.12	37.88
16	14.67	6.38	36	33.01	14.35	56	51.36	22.33	76	69.70	30.30	96	88.04	38.28
17	15.59	6.78	37	33.93	14.75	57	52.27	22.73	77	70.61	30.70	97	88.95	38.68
18	16.51	7.18	38	34.85	15.15	58	53.19	23.13	78	71.53	31.10	98	89.87	39.08
19	17.42	7.58	39	35.77	15.55	59	54.11	23.53	79	72.45	31.50	99	90.79	39.48
20	18.34	7.97	40	36.68	15.95	60	55.02	23.92	80	73.36	31.90	100	91.71	39.87
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

66 $\frac{1}{2}$ DEGREES

TRAVERSE TABLE

77

23¾ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.92	0.40	21	19.22	8.46	41	37.53	16.51	61	55.83	24.57	81	74.14	32.62
2	1.83	0.81	22	20.14	8.86	42	38.44	16.92	62	56.75	24.97	82	75.06	33.03
3	2.75	1.21	23	21.05	9.26	43	39.36	17.32	63	57.66	25.37	83	75.97	33.43
4	3.66	1.61	24	21.97	9.67	44	40.27	17.72	64	58.58	25.78	84	76.89	33.83
5	4.58	2.01	25	22.88	10.07	45	41.19	18.12	65	59.50	26.18	85	77.80	34.23
6	5.49	2.42	26	23.80	10.47	46	42.10	18.53	66	60.41	26.58	86	78.72	34.64
7	6.41	2.82	27	24.71	10.87	47	43.02	18.93	67	61.33	26.98	87	79.63	35.04
8	7.32	3.22	28	25.63	11.28	48	43.93	19.33	68	62.24	27.39	88	80.55	35.44
9	8.24	3.62	29	26.54	11.68	49	44.85	19.73	69	63.16	27.79	89	81.46	35.84
10	9.15	4.03	30	27.46	12.08	50	45.77	20.14	70	64.07	28.19	90	82.38	36.25
11	10.07	4.43	31	28.37	12.49	51	46.68	20.54	71	64.99	28.59	91	83.29	36.65
12	10.98	4.83	32	29.23	12.89	52	47.60	20.94	72	65.90	29.00	92	84.21	37.05
13	11.90	5.24	33	30.21	13.29	53	48.51	21.35	73	66.82	29.40	93	85.12	37.46
14	12.81	5.64	34	31.12	13.69	54	49.43	21.75	74	67.73	29.80	94	86.04	37.86
15	13.73	6.04	35	32.04	14.10	55	50.34	22.15	75	68.65	30.21	95	86.95	38.26
16	14.64	6.44	36	32.95	14.50	56	51.26	22.55	76	69.56	30.61	96	87.87	38.66
17	15.56	6.85	37	33.87	14.90	57	52.17	22.96	77	70.48	31.01	97	88.79	39.07
18	16.48	7.25	38	34.78	15.30	58	53.09	23.36	78	71.39	31.41	98	89.70	39.47
19	17.39	7.65	39	35.70	15.71	59	54.00	23.76	79	72.31	31.82	99	90.62	39.87
20	18.31	8.05	40	36.61	16.11	60	54.92	24.16	80	73.22	32.22	100	91.53	40.27

66¼ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.91	0.41	21	19.18	8.54	41	37.46	16.68	61	55.73	24.81	81	74.00	32.95
2	1.83	0.81	22	20.10	8.95	42	38.37	17.08	62	56.64	25.22	82	74.91	33.35
3	2.74	1.22	23	21.01	9.35	43	39.28	17.49	63	57.55	25.62	83	75.82	33.76
4	3.65	1.63	24	21.93	9.76	44	40.20	17.90	64	58.47	26.03	84	76.74	34.17
5	4.57	2.03	25	22.84	10.17	45	41.11	18.30	65	59.38	26.44	85	77.65	34.57
6	5.48	2.44	26	23.75	10.58	46	42.02	18.71	66	60.29	26.84	86	78.56	34.98
7	6.39	2.85	27	24.67	10.98	47	42.94	19.12	67	61.21	27.25	87	79.48	35.39
8	7.31	3.25	28	25.58	11.39	48	43.85	19.52	68	62.12	27.66	88	80.39	35.79
9	8.22	3.66	29	26.49	11.80	49	44.76	19.93	69	63.03	28.06	89	81.31	36.20
10	9.14	4.07	30	27.41	12.20	50	45.68	20.34	70	63.95	28.47	90	82.22	36.61
11	10.05	4.47	31	28.32	12.61	51	46.59	20.74	71	64.86	28.88	91	83.13	37.01
12	10.96	4.88	32	29.23	13.02	52	47.50	21.15	72	65.78	29.28	92	84.05	37.42
13	11.88	5.29	33	30.15	13.42	53	48.42	21.56	73	66.69	29.69	93	84.96	37.83
14	12.79	5.69	34	31.06	13.83	54	49.33	21.96	74	67.60	30.10	94	85.87	38.23
15	13.70	6.10	35	31.97	14.24	55	50.24	22.37	75	68.52	30.51	95	86.79	38.64
16	14.62	6.51	36	32.89	14.64	56	51.16	22.78	76	69.43	30.91	96	87.70	39.05
17	15.53	6.92	37	33.80	15.05	57	52.07	23.18	77	70.34	31.32	97	88.61	39.45
18	16.44	7.32	38	34.71	15.46	58	52.99	23.59	78	71.26	31.73	98	89.53	39.86
19	17.36	7.73	39	35.63	15.86	59	53.90	24.00	79	72.17	32.13	99	90.44	40.27
20	18.27	8.13	40	36.54	16.27	60	54.81	24.40	80	73.08	32.54	100	91.35	40.65

66 DEGREES

TRAVERSE TABLE

24 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.91	0.41	21	19.15	8.63	41	37.38	16.84	61	55.62	25.05	81	73.85	33.27
2	1.82	0.82	22	20.06	9.04	42	38.29	17.25	62	56.53	25.46	82	74.76	33.68
3	2.74	1.23	23	20.97	9.45	43	39.21	17.66	63	57.44	25.88	83	75.68	34.09
4	3.65	1.64	24	21.88	9.86	44	40.12	18.07	64	58.35	26.29	84	76.59	34.50
5	4.56	2.05	25	22.79	10.27	45	41.03	18.48	65	59.26	26.70	85	77.50	34.91
6	5.47	2.46	26	23.71	10.68	46	41.94	18.89	66	60.18	27.11	86	78.41	35.32
7	6.38	2.87	27	24.62	11.09	47	42.85	19.30	67	61.09	27.52	87	79.32	35.73
8	7.29	3.29	28	25.53	11.50	48	43.76	19.71	68	62.00	27.93	88	80.24	36.14
9	8.21	3.70	29	26.44	11.91	49	44.68	20.13	69	62.91	28.34	89	81.15	36.55
10	9.12	4.11	30	27.35	12.32	50	45.59	20.54	70	63.82	28.75	90	82.06	36.96
11	10.03	4.52	31	28.26	12.73	51	46.50	20.95	71	64.74	29.16	91	82.97	37.38
12	10.94	4.93	32	29.18	13.14	52	47.41	21.36	72	65.65	29.57	92	83.88	37.79
13	11.85	5.34	33	30.09	13.55	53	48.32	21.77	73	66.56	29.98	93	84.79	38.20
14	12.76	5.75	34	31.00	13.96	54	49.24	22.18	74	67.47	30.39	94	85.71	38.61
15	13.68	6.16	35	31.91	14.38	55	50.15	22.59	75	68.38	30.80	95	86.62	39.02
16	14.59	6.57	36	32.82	14.79	56	51.06	23.00	76	69.29	31.21	96	87.53	39.43
17	15.50	6.98	37	33.74	15.20	57	51.97	23.41	77	70.21	31.63	97	88.44	39.84
18	16.41	7.39	38	34.65	15.61	58	52.88	23.82	78	71.12	32.04	98	89.35	40.25
19	17.32	7.80	39	35.56	16.02	59	53.79	24.23	79	72.03	32.45	99	90.26	40.66
20	18.24	8.21	40	36.47	16.43	60	54.71	24.64	80	72.94	32.86	100	91.18	41.07

65 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.91	0.41	21	19.11	8.71	41	37.31	17.00	61	55.51	25.30	81	73.71	33.59
2	1.82	0.83	22	20.20	9.12	42	38.22	17.42	62	56.42	25.71	82	74.62	34.00
3	2.73	1.24	23	20.93	9.54	43	39.13	17.83	63	57.33	26.13	83	75.53	34.42
4	3.64	1.66	24	21.84	9.95	44	40.04	18.25	64	58.24	26.54	84	76.44	34.83
5	4.55	2.07	25	22.75	10.37	45	40.95	18.66	65	59.15	26.96	85	77.35	35.25
6	5.46	2.49	26	23.66	10.78	46	41.86	19.08	66	60.06	27.37	86	78.26	35.66
7	6.37	2.90	27	24.57	11.20	47	42.77	19.49	67	60.97	27.78	87	79.17	36.08
8	7.28	3.32	28	25.48	11.61	48	43.68	19.91	68	61.88	28.20	88	80.08	36.49
9	8.19	3.73	29	26.39	12.03	49	44.59	20.32	69	62.79	28.61	89	80.99	36.91
10	9.10	4.15	30	27.30	12.44	50	45.50	20.73	70	63.70	29.03	90	81.90	37.32
11	10.01	4.56	31	28.21	12.86	51	46.41	21.15	71	64.61	29.44	91	82.81	37.74
12	10.92	4.98	32	29.12	13.27	52	47.32	21.56	72	65.52	29.86	92	83.72	38.15
13	11.83	5.39	33	30.03	13.68	53	48.23	21.98	73	66.43	30.27	93	84.63	38.57
14	12.74	5.81	34	30.94	14.10	54	49.14	22.39	74	67.34	30.69	94	85.54	38.98
15	13.65	6.22	35	31.85	14.51	55	50.05	22.81	75	68.25	31.10	95	86.45	39.40
16	14.56	6.64	36	32.76	14.93	56	50.96	23.22	76	69.16	31.52	96	87.36	39.81
17	15.47	7.05	37	33.67	15.34	57	51.87	23.64	77	70.07	31.93	97	88.27	40.23
18	16.38	7.46	38	34.58	15.76	58	52.78	24.05	78	70.98	32.35	98	89.18	40.64
19	17.29	7.88	39	35.49	16.17	59	53.69	24.47	79	71.89	32.76	99	90.09	41.05
20	18.20	8.29	40	36.40	16.59	60	54.60	24.88	80	72.80	33.18	100	91.00	41.47

65 $\frac{1}{2}$ DEGREES

TRAVERSE TABLE

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24¾ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.91	0.42	21	19.07	8.79	41	37.23	17.16	61	55.40	25.54	81	73.56	33.91
2	1.82	0.84	22	19.98	9.21	42	38.14	17.58	62	56.30	25.96	82	74.47	34.33
3	2.72	1.26	23	20.89	9.63	43	39.05	18.00	63	57.21	26.38	83	75.38	34.75
4	3.63	1.67	24	21.80	10.05	44	39.96	18.42	64	58.12	26.79	84	76.28	35.17
5	4.54	2.09	25	22.70	10.47	45	40.87	18.84	65	59.03	27.21	85	77.19	35.59
6	5.45	2.51	26	23.61	10.89	46	41.77	19.26	66	59.94	27.63	86	78.10	36.00
7	6.36	2.93	27	24.52	11.30	47	42.68	19.68	67	60.85	28.05	87	79.01	36.42
8	7.27	3.35	28	25.43	11.72	48	43.59	20.10	68	61.75	28.47	88	79.92	36.84
9	8.17	3.77	29	26.34	12.14	49	44.50	20.51	69	62.66	28.89	89	80.82	37.26
10	9.08	4.19	30	27.24	12.56	50	45.41	20.93	70	63.57	29.31	90	81.73	37.68
11	9.99	4.61	31	28.15	12.98	51	46.32	21.35	71	64.48	29.72	91	82.64	38.10
12	10.90	5.02	32	29.06	13.40	52	47.22	21.77	72	65.39	30.14	92	83.55	38.52
13	11.81	5.44	33	29.97	13.82	53	48.13	22.19	73	66.29	30.56	93	84.46	38.94
14	12.71	5.86	34	30.88	14.23	54	49.04	22.61	74	67.20	30.98	94	85.37	39.35
15	13.62	6.28	35	31.78	14.65	55	49.95	23.03	75	68.11	31.40	95	86.27	39.77
16	14.53	6.70	36	32.69	15.07	56	50.86	23.44	76	69.02	31.82	96	87.18	40.19
17	15.44	7.12	37	33.60	15.49	57	51.76	23.86	77	69.93	32.24	97	88.09	40.61
18	16.35	7.54	38	34.51	15.91	58	52.67	24.28	78	70.84	32.66	98	89.00	41.03
19	17.25	7.95	39	35.42	16.33	59	53.58	24.70	79	71.74	33.07	99	89.91	41.45
20	18.16	8.37	40	36.33	16.75	60	54.49	25.12	80	72.65	33.49	100	90.81	41.87

Dist.	Dep.	Lat.												
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65¼ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.91	0.42	21	19.03	8.87	41	37.16	17.33	61	55.28	25.78	81	73.41	34.23
2	1.81	0.85	22	19.94	9.30	42	38.06	17.75	62	56.19	26.20	82	74.32	34.65
3	2.72	1.27	23	20.85	9.72	43	38.97	18.17	63	57.10	26.62	83	75.22	35.08
4	3.63	1.69	24	21.75	10.14	44	39.88	18.60	64	58.00	27.05	84	76.13	35.50
5	4.54	2.11	25	22.66	10.57	45	40.78	19.02	65	58.91	27.47	85	77.04	35.92
6	5.44	2.54	26	23.56	10.99	46	41.69	19.44	66	59.82	27.89	86	77.94	36.35
7	6.34	2.96	27	24.47	11.41	47	42.60	19.86	67	60.72	28.32	87	78.85	36.77
8	7.25	3.38	28	25.38	11.83	48	43.50	20.29	68	61.63	28.74	88	79.76	37.19
9	8.16	3.80	29	26.28	12.26	49	44.41	20.71	69	62.54	29.16	89	80.66	37.61
10	9.06	4.23	30	27.19	12.68	50	45.32	21.13	70	63.44	29.58	90	81.57	38.04
11	9.97	4.65	31	28.10	13.10	51	46.22	21.55	71	64.35	30.01	91	82.47	38.46
12	10.88	5.07	32	29.00	13.52	52	47.13	21.98	72	65.25	30.43	92	83.38	38.88
13	11.78	5.49	33	29.91	13.95	53	48.03	22.40	73	66.16	30.85	93	84.29	39.30
14	12.69	5.92	34	30.81	14.37	54	48.94	22.82	74	67.07	31.27	94	85.19	39.73
15	13.59	6.34	35	31.72	14.79	55	49.85	23.24	75	67.97	31.70	95	86.10	40.15
16	14.50	6.76	36	32.63	15.21	56	50.75	23.67	76	68.88	32.12	96	87.01	40.57
17	15.41	7.18	37	33.53	15.64	57	51.66	24.09	77	69.79	32.54	97	87.91	40.99
18	16.31	7.61	38	34.44	16.06	58	52.57	24.51	78	70.69	32.96	98	88.82	41.42
19	17.22	8.03	39	35.35	16.48	59	53.47	24.93	79	71.60	33.39	99	89.72	41.84
20	18.13	8.45	40	36.25	16.90	60	54.38	25.36	80	72.50	33.81	100	90.63	42.26

Dist.	Dep.	Lat.												
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65 DEGREES

TRAVERSE TABLE

25 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.90	0.43	21	18.99	8.96	41	37.08	17.49	61	55.17	26.02	81	73.26	34.55
2	1.81	0.85	22	19.90	9.38	42	37.99	17.92	62	56.08	26.45	82	74.17	34.98
3	2.71	1.28	23	20.80	9.81	43	38.89	18.34	63	56.98	26.87	83	75.07	35.41
4	3.62	1.71	24	21.71	10.24	44	39.80	18.77	64	57.89	27.30	84	75.97	35.83
5	4.52	2.13	25	22.61	10.66	45	40.70	19.20	65	58.79	27.73	85	76.88	36.26
6	5.43	2.56	26	23.52	11.09	46	41.60	19.62	66	59.69	28.15	86	77.78	36.68
7	6.33	2.99	27	24.42	11.52	47	42.51	20.05	67	60.60	28.58	87	78.69	37.11
8	7.24	3.41	28	25.32	11.94	48	43.41	20.48	68	61.50	29.01	88	79.59	37.54
9	8.14	3.84	29	26.23	12.37	49	44.32	20.90	69	62.41	29.43	89	80.50	37.96
10	9.04	4.27	30	27.13	12.80	50	45.22	21.33	70	63.31	29.86	90	81.40	38.39
11	9.95	4.69	31	28.04	13.22	51	46.13	21.75	71	64.22	30.29	91	82.31	38.82
12	10.85	5.12	32	28.94	13.65	52	47.03	22.18	72	65.12	30.71	92	83.21	39.24
13	11.76	5.55	33	29.85	14.08	53	47.94	22.61	73	66.03	31.14	93	84.11	39.67
14	12.66	5.97	34	30.75	14.50	54	48.84	23.03	74	66.93	31.57	94	85.02	40.10
15	13.57	6.40	35	31.66	14.93	55	49.74	23.46	75	67.83	21.99	95	85.92	40.52
16	14.47	6.83	36	32.56	15.36	56	50.65	23.89	76	68.74	22.42	96	86.83	40.95
17	15.38	7.25	37	33.46	15.78	57	51.55	24.31	77	69.64	22.85	97	87.73	41.38
18	16.28	7.68	38	34.37	16.21	58	52.46	24.74	78	70.55	23.27	98	88.64	41.80
19	17.18	8.10	39	35.27	16.64	59	53.36	25.17	79	71.45	23.70	99	89.54	42.23
20	18.09	8.53	40	36.18	17.06	60	54.27	25.59	80	72.36	24.13	100	90.45	42.66

64 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.90	0.43	21	18.95	9.04	41	37.01	17.65	61	55.06	26.26	81	73.11	34.87
2	1.81	0.86	22	19.86	9.47	42	37.91	18.08	62	55.96	26.69	82	74.01	35.30
3	2.71	1.29	23	20.76	9.90	43	38.81	18.51	63	56.86	27.12	83	74.91	35.73
4	3.61	1.72	24	21.66	10.33	44	39.71	18.94	64	57.77	27.55	84	75.82	36.16
5	4.51	2.15	25	22.56	10.76	45	40.62	19.37	65	58.67	27.98	85	76.72	36.59
6	5.42	2.58	26	23.47	11.19	46	41.52	19.80	66	59.57	28.41	86	77.62	37.02
7	6.32	3.01	27	24.37	11.62	47	42.42	20.23	67	60.47	28.84	87	78.52	37.45
8	7.22	3.44	28	25.27	12.05	48	43.32	20.66	68	61.38	29.27	88	79.43	37.88
9	8.12	3.87	29	26.17	12.48	49	44.23	21.10	69	62.28	29.71	89	80.33	38.32
10	9.03	4.31	30	27.08	12.92	50	45.13	21.53	70	63.18	30.14	90	81.23	38.75
11	9.93	4.74	31	27.98	13.35	51	46.03	21.96	71	64.08	30.57	91	82.14	39.18
12	10.83	5.17	32	28.88	13.78	52	46.93	22.39	72	64.99	31.00	92	83.04	39.61
13	11.73	5.60	33	29.79	14.21	53	47.84	22.82	73	65.89	31.43	93	83.94	40.04
14	12.64	6.03	34	30.69	14.64	54	48.74	23.25	74	66.79	31.86	94	84.84	40.47
15	13.54	6.46	35	31.59	15.07	55	49.64	23.68	75	67.69	32.29	95	85.75	40.90
16	14.44	6.89	36	32.49	15.50	56	50.54	24.11	76	68.60	32.72	96	86.65	41.33
17	15.34	7.32	37	33.40	15.93	57	51.45	24.54	77	69.50	33.15	97	87.55	41.76
18	16.25	7.75	38	34.30	16.36	58	52.35	24.97	78	70.40	33.58	98	88.45	42.19
19	17.15	8.18	39	35.20	16.79	59	53.25	25.40	79	71.30	34.01	99	89.36	42.62
20	18.05	8.61	40	36.10	17.22	60	54.16	25.83	80	72.21	34.44	100	90.26	43.05

64 $\frac{1}{2}$ DEGREES

TRAVERSE TABLE

81

253/4 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.90	0.43	21	18.91	9.12	41	36.93	17.81	61	54.94	26.50	81	72.96	35.19
2	1.80	0.87	22	19.82	9.56	42	37.83	18.25	62	55.84	26.94	82	73.86	35.62
3	2.70	1.30	23	20.72	9.99	43	38.73	18.68	63	56.74	27.37	83	74.76	36.06
4	3.60	1.74	24	21.62	10.43	44	39.63	19.12	64	57.64	27.80	84	75.66	36.49
5	4.50	2.17	25	22.52	10.86	45	40.53	19.55	65	58.55	28.24	85	76.56	36.93
6	5.40	2.61	26	23.42	11.30	46	41.43	19.98	66	59.45	28.67	86	77.46	37.36
7	6.30	3.04	27	24.32	11.73	47	42.33	20.42	67	60.35	29.11	87	78.36	37.80
8	7.21	3.48	28	25.22	12.16	48	43.23	20.85	68	61.25	29.54	88	79.26	38.23
9	8.11	3.91	29	26.12	12.60	49	44.13	21.29	69	62.15	29.98	89	80.16	38.67
10	9.01	4.34	30	27.02	13.03	50	45.03	21.72	70	63.05	30.41	90	81.06	39.10
11	9.91	4.78	31	27.92	13.47	51	45.94	22.16	71	63.95	30.85	91	81.96	39.53
12	10.81	5.21	32	28.82	13.90	52	46.84	22.59	72	64.85	31.28	92	82.86	39.97
13	11.71	5.65	33	29.72	14.34	53	47.74	23.03	73	65.75	31.71	93	83.76	40.40
14	12.61	6.08	34	30.62	14.77	54	48.64	23.46	74	66.65	32.15	94	84.67	40.84
15	13.51	6.52	35	31.52	15.21	55	49.54	23.89	75	67.55	32.58	95	85.57	41.27
16	14.41	6.95	36	32.42	15.64	56	50.44	24.33	76	68.45	33.02	96	86.47	41.71
17	15.31	7.39	37	33.32	16.07	57	51.34	24.76	77	69.35	33.45	97	87.37	42.14
18	16.21	7.82	38	34.23	16.51	58	52.24	25.20	78	70.25	33.89	98	88.27	42.58
19	17.11	8.25	39	35.13	16.94	59	53.14	25.63	79	71.16	34.32	99	89.17	43.01
20	18.01	8.69	40	36.03	17.38	60	54.04	26.07	80	72.06	34.76	100	90.07	43.44

Dist.	Dep.	Lat.												
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64 1/4 DEGREES

26 DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.90	0.44	21	18.87	9.21	41	36.85	17.97	61	54.83	26.74	81	72.80	35.51
2	1.80	0.88	22	19.77	9.64	42	37.75	18.41	62	55.73	27.18	82	73.70	35.95
3	2.70	1.32	23	20.67	10.08	43	38.65	18.85	63	56.62	27.62	83	74.60	36.38
4	3.60	1.75	24	21.57	10.52	44	39.55	19.29	64	57.52	28.06	84	75.50	36.82
5	4.49	2.19	25	22.47	10.96	45	40.45	19.73	65	58.42	28.49	85	76.40	37.26
6	5.39	2.63	26	23.37	11.40	46	41.34	20.17	66	59.32	28.93	86	77.30	37.70
7	6.29	3.07	27	24.27	11.84	47	42.24	20.60	67	60.22	29.37	87	78.20	38.14
8	7.19	3.51	28	25.17	12.27	48	43.14	21.04	68	61.12	29.81	88	79.09	38.58
9	8.09	3.95	29	26.06	12.71	49	44.04	21.48	69	62.02	30.25	89	79.99	39.01
10	8.99	4.38	30	26.96	13.15	50	44.94	21.92	70	62.92	30.69	90	80.89	39.45
11	9.89	4.82	31	27.86	13.59	51	45.84	22.36	71	63.81	31.12	91	81.79	39.89
12	10.79	5.26	32	28.76	14.03	52	46.74	22.80	72	64.71	31.56	92	82.69	40.33
13	11.68	5.70	33	29.66	14.47	53	47.64	23.23	73	65.61	32.00	93	83.59	40.77
14	12.58	6.14	34	30.56	14.90	54	48.53	23.67	74	66.51	32.44	94	84.49	41.21
15	13.48	6.58	35	31.46	15.34	55	49.43	24.11	75	67.41	32.88	95	85.39	41.65
16	14.38	7.01	36	32.36	15.78	56	50.33	24.55	76	68.31	33.32	96	86.28	42.08
17	15.28	7.45	37	33.26	16.22	57	51.23	24.99	77	69.21	33.75	97	87.18	42.52
18	16.18	7.89	38	34.15	16.66	58	52.13	25.43	78	70.11	34.19	98	88.08	42.96
19	17.08	8.33	39	35.05	17.10	59	53.03	25.86	79	71.00	34.63	99	88.98	43.40
20	17.98	8.77	40	35.95	17.53	60	53.93	26.30	80	71.90	35.07	100	89.88	43.84

Dist.	Dep.	Lat.												
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64 DEGREES

TRAVERSE TABLE

26 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.90	0.44	21	18.83	9.29	41	36.77	18.13	61	54.71	26.98	81	72.65	35.83
2	1.79	0.88	22	19.73	9.73	42	37.67	18.58	62	55.61	27.42	82	73.54	36.27
3	2.69	1.33	23	20.63	10.17	43	38.57	19.02	63	56.50	27.86	83	74.44	36.71
4	3.59	1.77	24	21.52	10.61	44	39.46	19.46	64	57.40	28.31	84	75.34	37.15
5	4.48	2.21	25	22.42	11.06	45	40.36	19.90	65	58.30	28.75	85	76.23	37.59
6	5.38	2.65	26	23.32	11.50	46	41.26	20.35	66	59.19	29.19	86	77.13	38.04
7	6.28	3.10	27	24.22	11.94	47	42.15	20.79	67	60.09	29.63	87	78.03	38.48
8	7.17	3.54	28	25.11	12.38	48	43.05	21.23	68	60.99	30.08	88	78.92	38.92
9	8.07	3.98	29	26.01	12.83	49	43.95	21.67	69	61.88	30.52	89	79.82	39.36
10	8.97	4.42	30	26.91	13.27	50	44.84	22.11	70	62.78	30.96	90	80.72	39.81
11	9.87	4.87	31	27.80	13.71	51	45.74	22.56	71	63.68	31.40	91	81.62	40.25
12	10.76	5.31	32	28.70	14.15	52	46.64	23.00	72	64.57	31.84	92	82.51	40.69
13	11.66	5.75	33	29.60	14.60	53	47.53	23.44	73	65.47	32.29	93	83.41	41.13
14	12.56	6.19	34	30.49	15.04	54	48.43	23.88	74	66.37	32.73	94	84.31	41.58
15	13.45	6.63	35	31.39	15.48	55	49.33	24.33	75	67.27	33.17	95	85.20	42.02
16	14.35	7.08	36	32.29	15.92	56	50.22	24.77	76	68.16	33.61	96	86.10	42.46
17	15.25	7.52	37	33.18	16.36	57	51.12	25.21	77	69.06	34.06	97	87.00	42.90
18	16.14	7.96	38	34.08	16.81	58	52.02	25.65	78	69.96	34.50	98	87.89	43.34
19	17.04	8.40	39	34.98	17.25	59	52.92	26.09	79	70.85	34.94	99	88.79	43.79
20	17.94	8.85	40	35.87	17.69	60	53.81	26.54	80	71.75	35.38	100	89.69	44.23

63 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.89	0.45	21	18.79	9.37	41	36.69	18.29	61	54.59	27.22	81	72.49	36.14
2	1.79	0.89	22	19.69	9.82	42	37.59	18.74	62	55.49	27.66	82	73.38	36.59
3	2.68	1.34	23	20.58	10.26	43	38.48	19.19	63	56.38	28.11	83	74.28	37.03
4	3.58	1.78	24	21.48	10.71	44	39.38	19.63	64	57.28	28.56	84	75.17	37.48
5	4.47	2.23	25	22.37	11.15	45	40.27	20.08	65	58.17	29.00	85	76.07	37.93
6	5.37	2.68	26	23.27	11.60	46	41.17	20.53	66	59.07	29.45	86	76.96	38.37
7	6.26	3.12	27	24.16	12.05	47	42.06	20.97	67	59.96	29.90	87	77.86	38.82
8	7.16	3.57	28	25.06	12.49	48	42.96	21.42	68	60.86	30.34	88	78.75	39.27
9	8.05	4.02	29	25.95	12.94	49	43.85	21.86	69	61.75	30.79	89	79.65	39.71
10	8.95	4.46	30	26.85	13.39	50	44.75	22.31	70	62.65	31.23	90	80.54	40.16
11	9.84	4.91	31	27.74	13.83	51	45.64	22.76	71	63.54	31.68	91	81.44	40.60
12	10.74	5.35	32	28.64	14.28	52	46.54	23.20	72	64.44	32.13	92	82.33	41.05
13	11.63	5.80	33	29.53	14.72	53	47.43	23.65	73	65.33	32.57	93	83.23	41.50
14	12.53	6.25	34	30.43	15.17	54	48.33	24.09	74	66.23	33.02	94	84.12	41.94
15	13.42	6.69	35	31.32	15.62	55	49.22	24.54	75	67.12	33.46	95	85.02	42.39
16	14.32	7.14	36	32.22	16.06	56	50.12	24.99	76	68.01	33.91	96	85.91	42.83
17	15.21	7.59	37	33.11	16.51	57	51.01	25.43	77	68.91	34.36	97	86.81	43.28
18	16.11	8.03	38	34.01	16.96	58	51.91	25.88	78	69.80	34.80	98	87.70	43.73
19	17.00	8.48	39	34.90	17.40	59	52.80	26.33	79	70.70	35.25	99	88.60	44.17
20	17.90	8.92	40	35.80	17.85	60	53.70	26.77	80	71.59	35.70	100	89.49	44.62

63 $\frac{1}{2}$ DEGREES

TRAVERSE TABLE

83

26¾ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.89	0.45	21	18.75	9.45	41	36.61	18.45	61	54.47	27.46	81	72.33	36.46
2	1.79	0.90	22	19.65	9.90	42	37.51	18.90	62	55.36	27.91	82	73.22	36.91
3	2.68	1.35	23	20.54	10.35	43	38.40	19.35	63	56.26	28.36	83	74.12	37.36
4	3.57	1.80	24	21.43	10.80	44	39.29	19.80	64	57.15	28.81	84	75.01	37.81
5	4.46	2.25	25	22.32	11.25	45	40.18	20.25	65	58.04	29.26	85	75.90	38.26
6	5.36	2.70	26	23.22	11.70	46	41.08	20.70	66	58.94	29.71	86	76.80	38.71
7	6.25	3.15	27	24.11	12.15	47	41.97	21.15	67	59.83	30.16	87	77.69	39.16
8	7.14	3.60	28	25.00	12.60	48	42.86	21.60	68	60.72	30.61	88	78.58	39.61
9	8.04	4.05	29	25.90	13.05	49	43.76	22.05	69	61.62	31.06	89	79.48	40.06
10	8.93	4.50	30	26.79	13.50	50	44.65	22.50	70	62.51	31.51	90	80.37	40.51
11	9.82	4.95	31	27.68	13.95	51	45.54	22.96	71	63.40	31.96	91	81.26	40.96
12	10.72	5.40	32	28.58	14.40	52	46.43	23.41	72	64.29	32.41	92	82.15	41.41
13	11.61	5.85	33	29.47	14.85	53	47.33	23.86	73	65.19	32.86	93	83.05	41.86
14	12.50	6.30	34	30.36	15.30	54	48.22	24.31	74	66.08	33.31	94	83.94	42.31
15	13.39	6.75	35	31.25	15.75	55	49.11	24.76	75	66.97	33.76	95	84.83	42.76
16	14.29	7.20	36	32.15	16.20	56	50.01	25.21	76	67.87	34.21	96	85.73	43.21
17	15.18	7.65	37	33.04	16.65	57	50.00	25.66	77	68.76	34.66	97	86.62	43.66
18	16.07	8.10	38	33.93	17.10	58	51.79	26.11	78	69.65	35.11	98	87.51	44.11
19	16.97	8.55	39	34.83	17.55	59	52.69	26.56	79	70.55	35.56	99	88.40	44.56
20	17.86	9.00	40	35.72	18.00	60	53.58	27.01	80	71.44	36.01	100	89.30	45.01

63¼ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.89	0.45	21	18.71	9.53	41	36.53	18.61	61	54.35	27.69	81	72.17	36.77
2	1.78	0.91	22	19.60	9.99	42	37.42	19.07	62	55.24	28.15	82	73.06	37.23
3	2.67	1.36	23	20.49	10.44	43	38.31	19.52	63	56.13	28.60	83	73.95	37.68
4	3.56	1.82	24	21.38	10.90	44	39.20	19.98	64	57.02	29.06	84	74.84	38.14
5	4.45	2.27	25	22.28	11.35	45	40.10	20.43	65	57.92	29.51	85	75.74	38.59
6	5.35	2.72	26	23.17	11.80	46	40.99	20.88	66	58.81	29.96	86	76.63	39.04
7	6.24	3.18	27	24.06	12.26	47	41.88	21.34	67	59.70	30.42	87	77.52	39.50
8	7.13	3.63	28	24.95	12.71	48	42.77	21.79	68	60.59	30.87	88	78.41	39.95
9	8.02	4.09	29	25.84	13.17	49	43.66	22.25	69	61.48	31.33	89	79.30	40.41
10	8.91	4.54	30	26.73	13.62	50	44.55	22.70	70	62.37	31.78	90	80.19	40.86
11	9.80	4.99	31	27.62	14.07	51	45.44	23.15	71	63.26	32.23	91	81.08	41.31
12	10.69	5.45	32	28.51	14.53	52	46.33	23.61	72	64.15	32.69	92	81.97	41.77
13	11.58	5.90	33	29.40	14.98	53	47.22	24.06	73	65.04	33.14	93	82.86	42.22
14	12.47	6.36	34	30.29	15.44	54	48.11	24.52	74	65.93	33.60	94	83.75	42.68
15	13.37	6.81	35	31.19	15.89	55	49.01	24.97	75	66.83	34.05	95	84.65	43.13
16	14.26	7.26	36	32.08	16.34	56	49.90	25.42	76	67.72	34.50	96	85.54	43.58
17	15.15	7.72	37	32.97	16.80	57	50.79	25.88	77	68.61	34.96	97	86.43	44.04
18	16.04	8.17	38	33.86	17.25	58	51.68	26.33	78	69.50	35.41	98	87.32	44.49
19	16.93	8.63	39	34.75	17.71	59	52.57	26.79	79	70.39	35.87	99	88.21	44.95
20	17.82	9.08	40	35.64	18.16	60	53.46	27.24	80	71.28	36.32	100	89.10	45.40

63 DEGREES

TRAVERSE TABLE

27 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.89	0.46	21	18.67	9.62	41	36.45	18.77	61	54.23	27.93	81	72.01	37.09
2	1.78	0.92	22	19.56	10.07	42	37.34	19.23	62	55.12	28.39	82	72.90	37.55
3	2.67	1.37	23	20.45	10.53	43	38.23	19.69	63	56.01	28.85	83	73.79	38.00
4	3.56	1.83	24	21.34	10.99	44	39.12	20.15	64	56.90	29.30	84	74.68	38.46
5	4.45	2.29	25	22.23	11.45	45	40.01	20.60	65	57.79	29.76	85	75.57	38.92
6	5.33	2.75	26	23.11	11.90	46	40.89	21.06	66	58.68	30.22	86	76.46	39.38
7	6.22	3.21	27	24.00	12.36	47	41.78	21.52	67	59.56	30.68	87	77.34	39.83
8	7.11	3.66	28	24.89	12.82	48	42.67	21.98	68	60.45	31.14	88	78.23	40.29
9	8.00	4.12	29	25.78	13.28	49	43.56	22.44	69	61.34	31.59	89	79.12	40.75
10	8.89	4.58	30	26.67	13.74	50	44.45	22.89	70	62.23	32.05	90	80.01	41.21
11	9.78	5.04	31	27.56	14.19	51	45.34	23.35	71	63.12	32.51	91	80.90	41.67
12	10.67	5.49	32	28.45	14.65	52	46.23	23.81	72	64.01	32.97	92	81.79	42.12
13	11.56	5.95	33	29.34	15.11	53	47.12	24.27	73	64.90	33.42	93	82.68	42.58
14	12.45	6.41	34	30.23	15.57	54	48.01	24.73	74	65.79	33.88	94	83.57	43.04
15	13.34	6.87	35	31.12	16.03	55	48.90	25.18	75	66.68	34.34	95	84.46	43.50
16	14.22	7.33	36	32.00	16.48	56	49.78	25.64	76	67.57	34.80	96	85.35	43.96
17	15.11	7.78	37	32.89	16.94	57	50.67	26.10	77	68.45	35.26	97	86.23	44.41
18	16.00	8.24	38	33.78	17.40	58	51.56	26.56	78	69.34	35.71	98	87.12	44.87
19	16.89	8.70	39	34.67	17.86	59	52.45	27.01	79	70.23	36.17	99	88.01	45.33
20	17.78	9.16	40	35.56	18.31	60	53.34	27.47	80	71.12	36.63	100	88.90	45.79

62 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.89	0.46	21	18.63	9.70	41	36.37	18.93	61	54.11	28.17	81	71.85	37.40
2	1.77	0.92	22	19.51	10.16	42	37.25	19.39	62	54.99	28.63	82	72.73	37.86
3	2.66	1.39	23	20.40	10.62	43	38.14	19.86	63	55.88	29.09	83	73.62	38.33
4	3.55	1.85	24	21.29	11.08	44	39.03	20.32	64	56.77	29.55	84	74.51	38.79
5	4.44	2.31	25	22.18	11.54	45	39.92	20.78	65	57.66	30.01	85	75.40	39.25
6	5.32	2.77	26	23.06	12.01	46	40.80	21.24	66	58.54	30.48	86	76.28	39.71
7	6.21	3.23	27	23.95	12.47	47	41.69	21.70	67	59.43	30.94	87	77.17	40.17
8	7.10	3.69	28	24.84	12.93	48	42.58	22.16	68	60.32	31.40	88	78.06	40.63
9	7.98	4.16	29	25.72	13.39	49	43.46	22.63	69	61.20	31.86	89	78.94	41.10
10	8.87	4.62	30	26.61	13.85	50	44.35	23.09	70	62.09	32.32	90	79.83	41.56
11	9.76	5.08	31	27.50	14.31	51	45.24	23.55	71	62.98	32.78	91	80.72	42.02
12	10.64	5.54	32	28.38	14.78	52	46.12	24.01	72	63.86	33.25	92	81.60	42.48
13	11.53	6.00	33	29.27	15.24	53	47.01	24.47	73	64.75	33.71	93	82.49	42.94
14	12.42	6.46	34	30.16	15.70	54	47.90	24.93	74	65.64	34.17	94	83.38	43.40
15	13.31	6.93	35	31.05	16.16	55	48.79	25.40	75	66.53	34.63	95	84.27	43.87
16	14.19	7.39	36	31.93	16.62	56	49.67	25.86	76	67.41	35.09	96	85.15	44.33
17	15.08	7.85	37	32.82	17.08	57	50.56	26.32	77	68.30	35.55	97	86.04	44.79
18	15.97	8.31	38	33.71	17.55	58	51.45	26.78	78	69.19	36.02	98	86.93	45.25
19	16.85	8.77	39	34.59	18.01	59	52.33	27.24	79	70.07	36.48	99	87.81	45.71
20	17.74	9.23	40	35.48	18.47	60	53.22	27.70	80	70.96	36.94	100	88.70	46.17

62 $\frac{1}{2}$ DEGREES

TRAVERSE TABLE

85

27½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.88	0.47	21	18.58	9.78	41	36.28	19.09	61	53.98	28.40	81	71.68	37.71
2	1.77	0.93	22	19.47	10.24	42	37.17	19.56	62	54.87	28.87	82	72.57	38.18
3	2.65	1.40	23	20.35	10.71	43	38.05	20.02	63	55.75	29.33	83	73.45	38.65
4	3.54	1.86	24	21.24	11.17	44	38.94	20.49	64	56.64	29.80	84	74.34	39.11
5	4.42	2.33	25	22.12	11.64	45	39.82	20.95	65	57.52	30.26	85	75.22	39.58
6	5.31	2.79	26	23.01	12.11	46	40.71	21.42	66	58.41	30.73	86	76.11	40.04
7	6.19	3.26	27	23.89	12.57	47	41.59	21.88	67	59.29	31.20	87	76.99	40.51
8	7.08	3.72	28	24.78	13.04	48	42.48	22.35	68	60.18	31.66	88	77.88	40.97
9	7.96	4.19	29	25.66	13.50	49	43.36	22.82	69	61.06	32.13	89	78.76	41.44
10	8.85	4.66	30	26.55	13.97	50	44.25	23.28	70	61.95	32.59	90	79.65	41.91
11	9.73	5.12	31	27.43	14.43	51	45.13	23.75	71	62.83	33.06	91	80.53	42.37
12	10.62	5.59	32	28.32	14.90	52	46.02	24.21	72	63.72	33.52	92	81.42	42.84
13	11.50	6.05	33	29.20	15.37	53	46.90	24.68	73	64.60	33.99	93	82.30	43.30
14	12.39	6.52	34	30.09	15.83	54	47.79	25.14	74	65.49	34.46	94	83.19	43.77
15	13.27	6.98	35	30.97	16.30	55	48.67	25.61	75	66.37	34.92	95	84.07	44.23
16	14.16	7.45	36	31.86	16.76	56	49.56	26.07	76	67.26	35.39	96	84.96	44.70
17	15.04	7.92	37	32.74	17.23	57	50.44	26.54	77	68.14	35.85	97	85.84	45.16
18	15.93	8.38	38	33.63	17.69	58	51.33	27.01	78	69.03	36.32	98	86.73	45.63
19	16.81	8.85	39	34.51	18.16	59	52.21	27.47	79	69.91	36.78	99	87.61	46.10
20	17.70	9.31	40	35.40	18.62	60	53.10	27.94	80	70.80	37.25	100	88.50	46.56

62½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.88	0.47	21	18.54	9.86	41	36.20	19.25	61	53.86	28.64	81	71.52	38.03
2	1.77	0.94	22	19.42	10.33	42	37.08	19.72	62	54.74	29.11	82	72.40	38.50
3	2.65	1.41	23	20.31	10.80	43	37.97	20.19	63	55.63	29.58	83	73.28	38.97
4	3.53	1.88	24	21.19	11.27	44	38.85	20.66	64	56.51	30.05	84	74.17	39.44
5	4.41	2.35	25	22.07	11.74	45	39.73	21.13	65	57.39	30.52	85	75.05	39.91
6	5.30	2.82	26	22.96	12.21	46	40.62	21.60	66	58.27	30.99	86	75.93	40.37
7	6.18	3.29	27	23.84	12.68	47	41.50	22.07	67	59.16	31.45	87	76.82	40.84
8	7.06	3.76	28	24.72	13.15	48	42.38	22.53	68	60.04	31.92	88	77.70	41.31
9	7.95	4.23	29	25.61	13.61	49	43.26	23.00	69	60.92	32.39	89	78.58	41.78
10	8.83	4.69	30	26.49	14.08	50	44.15	23.47	70	61.81	32.86	90	79.47	42.25
11	9.71	5.16	31	27.37	14.55	51	45.03	23.94	71	62.69	33.33	91	80.35	42.72
12	10.60	5.63	32	28.25	15.02	52	45.91	24.41	72	63.57	33.80	92	81.23	43.19
13	11.48	6.10	33	29.14	15.49	53	46.80	24.88	73	64.46	34.27	93	82.11	43.66
14	12.36	6.57	34	30.02	15.96	54	47.68	25.35	74	65.34	34.74	94	83.00	44.13
15	13.24	7.04	35	30.90	16.43	55	48.56	25.82	75	66.22	35.21	95	83.88	44.60
16	14.13	7.51	36	31.79	16.90	56	49.45	26.29	76	67.10	35.68	96	84.76	45.07
17	15.01	7.98	37	32.67	17.37	57	50.33	26.76	77	67.99	36.15	97	85.65	45.54
18	15.89	8.45	38	33.55	17.84	58	51.21	27.23	78	68.87	36.62	98	86.53	46.01
19	16.78	8.92	39	34.43	18.31	59	52.09	27.70	79	69.75	37.09	99	87.41	46.48
20	17.66	9.39	40	35.32	18.78	60	52.98	28.17	80	70.64	37.56	100	88.29	46.95

62 DEGREES

TRAVERSE TABLE

28½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.
1	0.88	0.47	21	18.50	9.94	41	36.12	19.41	61	53.73	28.87	81	71.35	38.34
2	1.76	0.95	22	19.38	10.41	42	37.00	19.88	62	54.62	29.35	82	73.23	38.81
3	2.64	1.42	23	20.26	10.89	43	37.88	20.35	63	55.50	29.82	83	73.11	39.29
4	3.52	1.89	24	21.14	11.36	44	38.76	20.83	64	56.38	30.29	84	73.99	39.76
5	4.40	2.37	25	22.02	11.83	45	39.64	21.30	65	57.26	30.77	85	74.88	40.23
6	5.29	2.84	26	22.90	12.31	46	40.52	21.77	66	58.14	31.24	86	75.76	40.71
7	6.17	3.31	27	23.78	12.78	47	41.40	22.25	67	59.02	31.71	87	76.64	41.18
8	7.05	3.79	28	24.66	13.25	48	42.28	22.72	68	59.90	32.19	88	77.52	41.65
9	7.93	4.26	29	25.55	13.73	49	43.16	23.19	69	60.78	32.66	89	78.40	42.13
10	8.81	4.73	30	26.43	14.20	50	44.04	23.67	70	61.66	33.13	90	79.28	42.60
11	9.69	5.21	31	27.31	14.67	51	44.93	24.14	71	62.54	33.61	91	80.16	43.07
12	10.57	5.68	32	28.19	15.15	52	45.81	24.61	72	63.42	34.08	92	81.04	43.55
13	11.45	6.15	33	29.07	15.62	53	46.69	25.09	73	64.30	34.55	93	81.92	44.02
14	12.33	6.63	34	29.95	16.09	54	47.57	25.56	74	65.19	35.03	94	82.80	44.49
15	13.21	7.10	35	30.83	16.57	55	48.45	26.03	75	66.07	35.50	95	83.68	44.97
16	14.09	7.57	36	31.71	17.04	56	49.33	26.51	76	66.95	35.97	96	84.57	45.44
17	14.98	8.05	37	32.59	17.51	57	50.21	26.98	77	67.83	36.45	97	85.45	45.91
18	15.86	8.52	38	33.47	17.99	58	51.09	27.45	78	68.71	36.92	98	86.33	46.39
19	16.74	8.99	39	34.35	18.46	59	51.97	27.93	79	69.59	37.39	99	87.21	46.86
20	17.62	9.47	40	35.24	18.93	60	52.85	28.40	80	70.47	37.87	100	88.09	47.33

61½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.
1	0.88	0.48	21	18.46	10.02	41	36.03	19.56	61	53.61	29.11	81	71.18	38.65
2	1.76	0.95	22	19.33	10.50	42	36.91	20.04	62	54.49	29.58	82	72.06	39.13
3	2.64	1.43	23	20.21	10.97	43	37.79	20.52	63	55.37	30.06	83	72.94	39.60
4	3.52	1.91	24	21.09	11.45	44	38.67	20.99	64	56.24	30.54	84	73.82	40.08
5	4.40	2.39	25	21.97	11.93	45	39.55	21.47	65	57.12	31.02	85	74.70	40.56
6	5.27	2.86	26	22.85	12.41	46	40.43	21.95	66	58.00	31.49	86	75.58	41.04
7	6.15	3.34	27	23.73	12.88	47	41.30	22.43	67	58.88	31.97	87	76.46	41.51
8	7.03	3.82	28	24.61	13.36	48	42.18	22.90	68	59.76	32.45	88	77.34	41.99
9	7.91	4.29	29	25.49	13.84	49	43.06	23.38	69	60.64	32.92	89	78.21	42.47
10	8.79	4.77	30	26.36	14.31	50	43.94	23.86	70	61.52	33.40	90	79.09	42.94
11	9.67	5.25	31	27.24	14.79	51	44.82	24.34	71	62.40	33.88	91	79.97	43.42
12	10.55	5.73	32	28.12	15.27	52	45.70	24.81	72	63.27	34.36	92	80.85	43.90
13	11.42	6.20	33	29.00	15.75	53	46.58	25.29	73	64.15	34.83	93	81.73	44.38
14	12.30	6.68	34	29.88	16.22	54	47.46	25.77	74	65.03	35.31	94	82.61	44.85
15	13.18	7.16	35	30.76	16.70	55	48.33	26.24	75	65.91	35.79	95	83.49	45.33
16	14.06	7.63	36	31.64	17.18	56	49.21	26.72	76	66.79	36.26	96	84.37	45.81
17	14.94	8.11	37	32.52	17.65	57	50.09	27.20	77	67.67	36.74	97	85.25	46.28
18	15.82	8.59	38	33.39	18.13	58	50.97	27.68	78	68.55	37.22	98	86.12	46.76
19	16.70	9.07	39	34.27	18.61	59	51.85	28.15	79	69.43	37.70	99	87.00	47.24
20	17.58	9.54	40	35.15	19.09	60	52.73	28.63	80	70.31	38.17	100	87.88	47.72

61½ DEGREES

TRAVERSE TABLE

87

28½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.88	0.48	21	18.41	10.10	41	35.95	19.72	61	53.48	29.34	81	71.01	38.96
2	1.75	0.96	22	19.29	10.58	42	36.82	20.20	62	54.36	29.82	82	71.89	39.44
3	2.63	1.44	23	20.16	11.06	43	37.70	20.68	63	55.23	30.30	83	72.77	39.92
4	3.51	1.92	24	21.04	11.54	44	38.58	21.16	64	56.11	30.78	84	73.64	40.40
5	4.38	2.40	25	21.92	12.02	45	39.45	21.64	65	56.99	31.26	85	74.52	40.88
6	5.26	2.89	26	22.79	12.51	46	40.33	22.13	66	57.86	31.75	86	75.40	41.36
7	6.14	3.37	27	23.67	12.99	47	41.21	22.61	67	58.74	32.23	87	76.28	41.85
8	7.01	3.85	28	24.55	13.47	48	42.08	23.09	68	59.62	32.71	88	77.15	42.33
9	7.89	4.33	29	25.43	13.95	49	42.96	23.57	69	60.49	33.19	89	78.03	42.81
10	8.77	4.81	30	26.30	14.43	50	43.84	24.05	70	61.37	33.67	90	78.91	43.29
11	9.64	5.29	31	27.18	14.91	51	44.71	24.53	71	62.25	34.15	91	79.78	43.77
12	10.52	5.77	32	28.06	15.39	52	45.59	25.01	72	63.12	34.63	92	80.66	44.25
13	11.40	6.25	33	28.93	15.87	53	46.47	25.49	73	64.00	35.11	93	81.54	44.73
14	12.27	6.73	34	29.81	16.35	54	47.34	25.97	74	64.88	35.59	94	82.41	45.21
15	13.15	7.21	35	30.69	16.83	55	48.22	26.45	75	65.75	36.07	95	83.29	45.69
16	14.03	7.69	36	31.56	17.32	56	49.10	26.94	76	66.63	36.56	96	84.17	46.17
17	14.90	8.18	37	32.44	17.80	57	49.97	27.42	77	67.51	37.04	97	85.04	46.66
18	15.78	8.66	38	33.32	18.28	58	50.85	27.90	78	68.38	37.52	98	85.92	47.14
19	16.66	9.14	39	34.19	18.76	59	51.73	28.38	79	69.26	38.00	99	86.80	47.62
20	17.53	9.62	40	35.07	19.24	60	52.60	28.86	80	70.14	38.48	100	87.67	48.10

61¼ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.87	0.48	21	18.37	10.18	41	35.86	19.88	61	53.35	29.57	81	70.84	39.27
2	1.75	0.97	22	19.24	10.67	42	36.73	20.36	62	54.23	30.06	82	71.72	39.75
3	2.62	1.45	23	20.12	11.15	43	37.61	20.85	63	55.10	30.54	83	72.59	40.24
4	3.50	1.94	24	20.99	11.64	44	38.48	21.33	64	55.98	31.03	84	73.47	40.72
5	4.37	2.42	25	21.87	12.12	45	39.36	21.82	65	56.85	31.51	85	74.34	41.21
6	5.25	2.91	26	22.74	12.60	46	40.23	22.30	66	57.72	32.00	86	75.22	41.69
7	6.12	3.39	27	23.61	13.09	47	41.11	22.79	67	58.60	32.48	87	76.09	42.18
8	7.00	3.88	28	24.49	13.57	48	41.98	23.27	68	59.47	32.97	88	76.97	42.66
9	7.87	4.36	29	25.36	14.06	49	42.86	23.76	69	60.35	33.45	89	77.84	43.15
10	8.75	4.85	30	26.24	14.54	50	43.73	24.24	70	61.22	33.94	90	78.72	43.63
11	9.62	5.33	31	27.11	15.03	51	44.61	24.73	71	62.10	34.42	91	79.59	44.12
12	10.50	5.82	32	27.99	15.51	52	45.48	25.21	72	62.97	34.91	92	80.46	44.60
13	11.37	6.30	33	28.86	16.00	53	46.35	25.69	73	63.85	35.39	93	81.34	45.09
14	12.24	6.79	34	29.74	16.48	54	47.23	26.18	74	64.72	35.88	94	82.21	45.57
15	13.12	7.27	35	30.61	16.97	55	48.10	26.66	75	65.60	36.36	95	83.09	46.06
16	13.99	7.76	36	31.49	17.45	56	48.98	27.15	76	66.47	36.85	96	83.96	46.54
17	14.87	8.24	37	32.36	17.94	57	49.85	27.63	77	67.35	37.33	97	84.84	47.03
18	15.74	8.73	38	33.24	18.42	58	50.73	28.12	78	68.22	37.82	98	85.71	47.51
19	16.62	9.21	39	34.11	18.91	59	51.60	28.60	79	69.09	38.30	99	86.59	48.00
20	17.49	9.70	40	34.98	19.39	60	52.48	29.09	80	69.97	38.78	100	87.46	48.48

61 DEGREES

TRAVERSE TABLE

29½ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.87	0.49	21	18.32	10.26	41	35.77	20.03	61	53.22	29.81	81	70.67	39.58
2	1.74	0.98	22	19.19	10.75	42	36.64	20.52	62	54.09	30.29	82	71.54	40.07
3	2.62	1.47	23	20.07	11.24	43	37.52	21.01	63	54.97	30.78	83	72.42	40.56
4	3.49	1.95	24	20.94	11.73	44	38.39	21.50	64	55.84	31.27	84	73.29	41.04
5	4.36	2.44	25	21.81	12.22	45	39.26	21.99	65	56.71	31.76	85	74.16	41.53
6	5.23	2.93	26	22.68	12.70	46	40.13	22.48	66	57.58	32.25	86	75.03	42.02
7	6.11	3.42	27	23.56	13.19	47	41.01	22.97	67	58.46	32.74	87	75.91	42.51
8	7.98	3.91	28	24.43	13.68	48	41.88	23.45	68	59.33	33.23	88	76.78	43.00
9	7.85	4.40	29	25.30	14.17	49	42.75	23.94	69	60.20	33.71	89	77.65	43.49
10	8.72	4.89	30	26.17	14.66	50	43.62	24.43	70	61.07	34.20	90	78.52	43.98
11	9.60	5.37	31	27.05	15.15	51	44.50	24.92	71	61.95	34.69	91	79.40	44.46
12	10.47	5.86	32	27.92	15.64	52	45.37	25.41	72	62.82	35.18	92	80.27	44.95
13	11.34	6.35	33	28.79	16.12	53	46.24	25.90	73	63.69	35.67	93	81.14	45.44
14	12.21	6.84	34	29.66	16.61	54	47.11	26.39	74	64.56	36.16	94	82.01	45.93
15	13.09	7.33	35	30.54	17.10	55	47.99	26.87	75	65.44	36.65	95	82.89	46.42
16	13.96	7.82	36	31.41	17.59	56	48.86	27.36	76	66.31	37.14	96	83.76	46.91
17	14.83	8.31	37	32.28	18.08	57	49.73	27.85	77	67.18	37.62	97	84.63	47.40
18	15.70	8.80	38	33.15	18.57	58	50.60	28.34	78	68.05	38.11	98	85.50	47.88
19	16.58	9.28	39	34.03	19.06	59	51.48	28.83	79	68.93	38.60	99	86.38	48.37
20	17.45	9.77	40	34.90	19.54	60	52.35	29.32	80	69.80	39.09	100	87.25	48.86
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

60¾ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.87	0.49	21	18.28	10.34	41	35.68	20.19	61	53.09	30.04	81	70.50	39.89
2	1.74	0.98	22	19.15	10.83	42	36.55	20.68	62	53.96	30.53	82	71.37	40.38
3	2.61	1.47	23	20.02	11.33	43	37.43	21.17	63	54.83	31.02	83	72.24	40.87
4	3.48	1.97	24	20.89	11.82	44	38.30	21.67	64	55.70	31.52	84	73.11	41.36
5	4.35	2.46	25	21.76	12.31	45	39.17	22.16	65	56.57	32.01	85	73.98	41.86
6	5.22	2.95	26	22.63	12.80	46	40.04	22.65	66	57.44	32.50	86	74.85	42.35
7	6.09	3.45	27	23.50	13.30	47	40.91	23.14	67	58.31	32.99	87	75.72	42.84
8	7.96	3.94	28	24.37	13.79	48	41.78	23.63	68	59.18	33.48	88	76.59	43.33
9	7.83	4.43	29	25.24	14.28	49	42.65	24.13	69	60.05	33.98	89	77.46	43.83
10	8.70	4.92	30	26.11	14.77	50	43.22	24.62	70	60.92	34.47	90	78.33	44.32
11	9.57	5.42	31	26.98	15.27	51	44.39	25.11	71	61.80	34.96	91	79.20	44.81
12	10.44	5.91	32	27.85	15.76	52	45.26	25.61	72	62.67	35.45	92	80.07	45.30
13	11.31	6.40	33	28.72	16.25	53	46.13	26.10	73	63.54	35.95	93	80.94	45.80
14	12.18	6.89	34	29.59	16.74	54	47.00	26.59	74	64.41	36.44	94	81.81	46.29
15	13.06	7.39	35	30.46	17.23	55	47.87	27.08	75	65.28	36.93	95	82.68	46.78
16	13.93	7.88	36	31.33	17.73	56	48.74	27.58	76	66.15	37.42	96	83.55	47.27
17	14.80	8.37	37	32.20	18.22	57	49.61	28.07	77	67.02	37.92	97	84.42	47.77
18	15.67	8.86	38	33.07	18.71	58	50.48	28.56	78	67.89	38.41	98	85.29	48.26
19	16.54	9.36	39	33.94	19.20	59	51.35	29.05	79	68.76	38.90	99	86.17	48.75
20	17.41	9.85	40	34.81	19.70	60	52.22	29.55	80	69.63	39.39	100	87.04	49.24
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

60½ DEGREES

29 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.87	0.50	21	18.23	10.42	41	35.60	20.34	61	52.96	30.27	81	70.32	40.19
2	1.74	0.99	22	19.10	10.92	42	36.46	20.84	62	53.83	30.77	82	71.19	40.69
3	2.60	1.49	23	19.97	11.41	43	37.33	21.34	63	54.70	31.26	83	72.06	41.19
4	3.47	1.98	24	20.84	11.91	44	38.20	21.83	64	55.56	31.76	84	72.93	41.68
5	4.34	2.48	25	21.70	12.41	45	39.07	22.33	65	56.43	32.25	85	73.80	42.18
6	5.21	2.98	26	22.57	12.90	46	39.94	22.83	66	57.30	32.75	86	74.67	42.67
7	6.08	3.47	27	23.44	13.40	47	40.81	23.32	67	58.17	33.25	87	75.53	43.17
8	6.95	3.97	28	24.31	13.89	48	41.67	23.82	68	59.04	33.74	88	76.40	43.67
9	7.81	4.47	29	25.18	14.39	49	42.54	24.31	69	59.91	34.24	89	77.27	44.16
10	8.68	4.96	30	26.05	14.89	50	43.41	24.81	70	60.77	34.74	90	78.14	44.66
11	9.55	5.46	31	26.91	15.38	51	44.28	25.31	71	61.64	35.23	91	79.01	45.16
12	10.42	5.94	32	27.78	15.88	52	45.15	25.80	72	62.51	35.73	92	79.87	45.65
13	11.29	6.43	33	28.65	16.38	53	46.01	26.30	73	63.38	36.22	93	80.74	46.15
14	12.15	6.93	34	29.52	16.87	54	46.88	26.80	74	64.25	36.72	94	81.61	46.64
15	13.02	7.44	35	30.39	17.37	55	47.75	27.29	75	65.11	37.22	95	82.48	47.14
16	13.89	7.94	36	31.26	17.86	56	48.62	27.79	76	65.98	37.71	96	83.35	47.64
17	14.76	8.44	37	32.12	18.36	57	49.49	28.28	77	66.85	38.21	97	84.22	48.13
18	15.63	8.93	38	32.99	18.86	58	50.36	28.78	78	67.72	38.70	98	85.08	48.63
19	16.50	9.43	39	33.86	19.35	59	51.22	29.28	79	68.59	39.20	99	85.95	49.13
20	17.36	9.92	40	34.73	19.85	60	52.09	29.77	80	69.46	39.70	100	86.82	49.62

60 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.												
1	0.87	0.50	21	18.19	10.50	41	35.51	20.50	61	52.83	30.50	81	70.15	40.50
2	1.73	1.00	22	19.05	11.00	42	36.37	21.00	62	53.69	31.00	82	71.01	41.00
3	2.60	1.50	23	19.92	11.50	43	37.24	21.50	63	54.56	31.50	83	71.88	41.50
4	3.46	2.00	24	20.78	12.00	44	38.11	22.00	64	55.43	32.00	84	72.75	42.00
5	4.33	2.50	25	21.65	12.50	45	38.97	22.50	65	56.29	32.50	85	73.61	42.50
6	5.20	3.00	26	22.52	13.00	46	39.84	23.00	66	57.16	33.00	86	74.48	43.00
7	6.06	3.50	27	23.38	13.50	47	40.70	23.50	67	58.02	33.50	87	75.34	43.50
8	6.93	4.00	28	24.25	14.00	48	41.57	24.00	68	58.89	34.00	88	76.21	44.00
9	7.79	4.50	29	25.11	14.50	49	42.44	24.50	69	59.76	34.50	89	77.08	44.50
10	8.66	5.00	30	25.98	15.00	50	43.30	25.00	70	60.62	35.00	90	77.94	45.00
11	9.53	5.50	31	26.85	15.50	51	44.17	25.50	71	61.49	35.50	91	78.81	45.50
12	10.39	6.00	32	27.71	16.00	52	45.03	26.00	72	62.35	36.00	92	79.67	46.00
13	11.26	6.50	33	28.58	16.50	53	45.90	26.50	73	63.22	36.50	93	80.54	46.50
14	12.12	7.00	34	29.44	17.00	54	46.77	27.00	74	64.09	37.00	94	81.41	47.00
15	12.99	7.50	35	30.31	17.50	55	47.63	27.50	75	64.95	37.50	95	82.27	47.50
16	13.86	8.00	36	31.18	18.00	56	48.50	28.00	76	65.82	38.00	96	83.14	48.00
17	14.72	8.50	37	32.04	18.50	57	49.36	28.50	77	66.68	38.50	97	84.00	48.50
18	15.59	9.00	38	32.91	19.00	58	50.23	29.00	78	67.55	39.00	98	84.87	49.00
19	16.45	9.50	39	33.77	19.50	59	51.10	29.50	79	68.42	39.50	99	85.74	49.50
20	17.32	10.00	40	34.64	20.00	60	51.96	30.00	80	69.28	40.00	100	86.60	50.00

60 DEGREES

TRAVERSE TABLE

30 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.												
1	0.86	0.50	21	18.14	10.58	41	35.42	20.65	61	52.69	30.73	81	69.97	40.81
2	1.73	1.01	22	19.00	11.08	42	36.28	21.16	62	53.56	31.23	82	70.83	41.31
3	2.59	1.51	23	19.87	11.59	43	37.14	21.66	63	54.42	31.74	83	71.70	41.81
4	3.46	2.02	24	20.73	12.09	44	38.01	22.17	64	55.29	32.24	84	72.56	42.32
5	4.32	2.52	25	21.60	12.59	45	38.87	22.67	65	56.15	32.75	85	73.43	42.82
6	5.18	3.02	26	22.46	13.10	46	39.74	23.17	66	57.01	33.25	86	74.29	43.32
7	6.05	3.53	27	23.32	13.60	47	40.60	23.68	67	57.88	33.75	87	75.15	43.83
8	6.91	4.03	28	24.19	14.11	48	41.46	24.18	68	58.74	34.26	88	76.02	44.33
9	7.77	4.53	29	25.05	14.61	49	42.33	24.68	69	59.60	34.76	89	76.88	44.84
10	8.64	5.04	30	25.92	15.11	50	43.19	25.19	70	60.47	35.26	90	77.75	45.34
11	9.50	5.54	31	26.78	15.62	51	44.06	25.69	71	61.33	35.77	91	78.61	45.84
12	10.37	6.05	32	27.64	16.12	52	44.92	26.20	72	62.20	36.27	92	79.47	46.35
13	11.23	6.55	33	28.51	16.62	53	45.78	26.70	73	63.06	36.78	93	80.34	46.85
14	12.09	7.05	34	29.37	17.13	54	46.65	27.20	74	63.92	37.28	94	81.20	47.35
15	12.96	7.56	35	30.23	17.63	55	47.51	27.71	75	64.79	37.78	95	82.06	47.86
16	13.82	8.06	36	31.10	18.14	56	48.37	28.21	76	65.65	38.29	96	82.93	48.36
17	14.69	8.56	37	31.96	18.64	57	49.24	28.72	77	66.52	38.79	97	83.79	48.87
18	15.55	9.07	38	32.83	19.14	58	50.10	29.22	78	67.38	39.29	98	84.66	49.37
19	16.41	9.57	39	33.69	19.65	59	50.97	29.72	79	68.24	39.80	99	85.52	49.87
20	17.28	10.08	40	34.55	20.15	60	51.83	30.23	80	69.11	40.30	100	86.38	50.38

59 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.												
1	0.86	0.51	21	18.09	10.66	41	35.33	20.81	61	52.56	30.96	81	69.79	41.11
2	1.72	1.02	22	18.96	11.17	42	36.19	21.32	62	53.42	31.47	82	70.65	41.62
3	2.58	1.52	23	19.82	11.67	43	37.05	21.82	63	54.28	31.97	83	71.52	42.13
4	3.45	2.03	24	20.68	12.18	44	37.91	22.33	64	55.14	32.48	84	72.38	42.63
5	4.31	2.54	25	21.54	12.69	45	38.77	22.84	65	56.01	32.99	85	73.24	43.14
6	5.17	3.05	26	22.40	13.20	46	39.63	23.35	66	56.87	33.50	86	74.10	43.65
7	6.03	3.55	27	23.26	13.70	47	40.50	23.85	67	57.73	34.01	87	74.96	44.16
8	6.89	4.06	28	24.13	14.21	48	41.36	24.36	68	58.59	34.51	88	75.82	44.66
9	7.75	4.57	29	24.99	14.72	49	42.22	24.87	69	59.45	35.02	89	76.68	45.17
10	8.62	5.08	30	25.85	15.23	50	43.08	25.38	70	60.31	35.53	90	77.55	45.68
11	9.48	5.58	31	26.71	15.73	51	43.94	25.88	71	61.18	36.04	91	78.41	46.19
12	10.34	6.09	32	27.57	16.24	52	44.80	26.39	72	62.04	36.54	92	79.27	46.69
13	11.20	6.60	33	28.43	16.75	53	45.67	26.90	73	62.90	37.05	93	80.13	47.20
14	12.06	7.11	34	29.30	17.26	54	46.53	27.41	74	63.76	37.56	94	80.99	47.71
15	12.92	7.61	35	30.16	17.76	55	47.39	27.91	75	64.62	38.07	95	81.85	48.22
16	13.79	8.12	36	31.02	18.27	56	48.25	28.42	76	65.48	38.57	96	82.72	48.72
17	14.65	8.63	37	31.88	18.78	57	49.11	28.93	77	66.35	39.08	97	83.58	49.23
18	15.51	9.14	38	32.74	19.29	58	49.97	29.44	78	67.21	39.59	98	84.44	49.74
19	16.37	9.64	39	33.60	19.79	59	50.84	29.94	79	68.07	40.10	99	85.30	50.25
20	17.23	10.15	40	34.47	20.30	60	51.70	30.45	80	68.93	40.60	100	86.16	50.75

59 $\frac{1}{2}$ DEGREES

TRAVERSE TABLE

91

303/4 DEGREES

Dist.	Lat.	Dep.												
1	0.86	0.51	21	18.05	10.74	41	35.24	20.96	61	52.42	31.19	81	69.61	41.41
2	1.72	1.02	22	18.91	11.25	42	36.10	21.47	62	53.28	31.70	82	70.47	41.93
3	2.58	1.53	23	19.77	11.76	43	36.95	21.99	63	54.14	32.21	83	71.33	42.44
4	3.44	2.05	24	20.63	12.27	44	37.81	22.50	64	55.00	32.72	84	72.19	42.95
5	4.30	2.56	25	21.49	12.78	45	38.67	23.01	65	55.86	33.23	85	73.05	43.46
6	5.16	3.07	26	22.34	13.29	46	39.53	23.52	66	56.72	33.75	86	73.91	43.97
7	6.02	3.58	27	23.20	13.80	47	40.39	24.03	67	57.58	34.26	87	74.77	44.48
8	6.88	4.09	28	24.06	14.32	48	41.25	24.54	68	58.44	34.77	88	75.63	44.99
9	7.73	4.60	29	24.92	14.83	49	42.11	25.05	69	59.30	35.28	89	76.49	45.51
10	8.59	5.11	30	25.78	15.34	50	42.97	25.56	70	60.16	35.79	90	77.35	46.02
11	9.45	5.62	31	26.64	15.85	51	43.83	26.08	71	61.02	36.30	91	78.21	46.53
12	10.31	6.14	32	27.50	16.36	52	44.69	26.59	72	61.88	36.81	92	79.07	47.04
13	11.17	6.65	33	28.36	16.87	53	45.55	27.10	73	62.74	37.32	93	79.92	47.55
14	12.03	7.16	34	29.22	17.38	54	46.41	27.61	74	63.60	37.84	94	80.78	48.06
15	12.89	7.67	35	30.08	17.90	55	47.27	28.12	75	64.46	38.35	95	81.64	48.57
16	13.75	8.18	36	30.94	18.41	56	48.13	28.63	76	65.31	38.86	96	82.50	49.08
17	14.61	8.69	37	31.80	18.92	57	48.99	29.14	77	66.17	39.37	97	83.36	49.60
18	15.47	9.20	38	32.66	19.43	58	49.85	29.65	78	67.03	39.88	98	84.22	50.11
19	16.33	9.71	39	33.52	19.94	59	50.70	30.17	79	67.89	40.39	99	85.08	50.62
20	17.19	10.23	40	34.38	20.45	60	51.56	30.68	80	68.75	40.90	100	85.94	51.13

59 1/4 DEGREES

Dist.	Lat.	Dep.												
1	0.86	0.51	21	18.00	10.82	41	35.14	21.12	61	52.29	31.42	81	69.43	41.72
2	1.71	1.03	22	18.86	11.33	42	36.00	21.63	62	53.14	31.93	82	70.29	42.23
3	2.57	1.55	23	19.71	11.85	43	36.86	22.15	63	54.00	32.45	83	71.14	42.75
4	3.43	2.06	24	20.57	12.36	44	37.72	22.66	64	54.86	32.96	84	72.00	43.26
5	4.29	2.58	25	21.43	12.88	45	38.57	23.18	65	55.72	33.48	85	72.86	43.78
6	5.14	3.09	26	22.29	13.39	46	39.43	23.69	66	56.57	33.99	86	73.72	44.29
7	6.00	3.61	27	23.14	13.91	47	40.29	24.21	67	57.43	34.51	87	74.57	44.81
8	6.86	4.12	28	24.00	14.42	48	41.14	24.72	68	58.29	35.02	88	75.43	45.32
9	7.71	4.64	29	24.86	14.94	49	42.00	25.24	69	59.14	35.54	89	76.29	45.84
10	8.57	5.15	30	25.71	15.45	50	42.86	25.75	70	60.00	36.05	90	77.15	46.35
11	9.43	5.67	31	26.57	15.97	51	43.72	26.27	71	60.86	36.57	91	78.00	46.87
12	10.29	6.18	32	27.43	16.48	52	44.57	26.78	72	61.72	37.08	92	78.86	47.38
13	11.14	6.70	33	28.29	17.00	53	45.43	27.30	73	62.57	37.60	93	79.72	47.90
14	12.00	7.21	34	29.14	17.51	54	46.29	27.81	74	63.43	38.11	94	80.57	48.41
15	12.86	7.73	35	30.00	18.03	55	47.14	28.33	75	64.29	38.63	95	81.43	48.93
16	13.71	8.24	36	30.86	18.54	56	48.00	28.84	76	65.14	39.14	96	82.29	49.44
17	14.57	8.76	37	31.72	19.06	57	48.86	29.36	77	66.00	39.66	97	83.15	49.96
18	15.43	9.27	38	32.57	19.57	58	49.72	29.87	78	66.86	40.17	98	84.00	50.47
19	16.29	9.79	39	33.43	20.09	59	50.57	30.39	79	67.72	40.69	99	84.86	50.99
20	17.14	10.30	40	34.29	20.60	60	51.43	30.90	80	68.57	41.20	100	85.72	51.50

59 DEGREES

TRAVERSE TABLE

31 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.												
1	0.85	0.52	21	17.95	10.89	41	35.05	21.27	61	52.15	31.65	81	69.25	42.02
2	1.71	1.04	22	18.81	11.41	42	35.91	21.79	62	53.00	32.16	82	70.10	42.54
3	2.56	1.56	23	19.66	11.93	43	36.76	22.31	63	53.86	32.68	83	70.96	43.06
4	3.42	2.08	24	20.52	12.45	44	37.62	22.83	64	54.71	33.20	84	71.81	43.58
5	4.27	2.59	25	21.37	12.97	45	38.47	23.34	65	55.57	33.72	85	72.67	44.10
6	5.13	3.11	26	22.23	13.49	46	39.33	23.86	66	56.42	34.24	86	73.52	44.61
7	5.98	3.63	27	23.08	14.01	47	40.18	24.38	67	57.28	34.76	87	74.38	45.13
8	6.84	4.15	28	23.94	14.53	48	41.04	24.90	68	58.13	35.28	88	75.23	45.65
9	7.69	4.67	29	24.79	15.04	49	41.89	25.42	69	58.99	35.80	89	76.09	46.17
10	8.55	5.19	30	25.65	15.56	50	42.75	25.94	70	59.84	36.31	90	76.94	46.69
11	9.40	5.71	31	26.50	16.08	51	43.60	26.46	71	60.70	36.83	91	77.80	47.21
12	10.26	6.23	32	27.36	16.60	52	44.46	26.98	72	61.55	37.35	92	78.65	47.73
13	11.11	6.74	33	28.21	17.12	53	45.31	27.49	73	62.41	37.87	93	79.51	48.25
14	11.97	7.26	34	29.07	17.64	54	46.17	28.01	74	63.26	38.39	94	80.36	48.76
15	12.82	7.78	35	29.92	18.16	55	47.02	28.53	75	64.12	38.91	95	81.22	49.28
16	13.68	8.30	36	30.78	18.68	56	47.88	29.05	76	64.97	39.43	96	82.07	49.80
17	14.53	8.82	37	31.63	19.19	57	48.73	29.57	77	65.83	39.95	97	82.93	50.32
18	15.39	9.34	38	32.49	19.71	58	49.58	30.09	78	66.68	40.46	98	83.78	50.84
19	16.24	9.86	39	33.34	20.23	59	50.44	30.61	79	67.54	40.98	99	84.64	51.36
20	17.10	10.38	40	34.20	20.75	60	51.29	31.13	80	68.39	41.50	100	85.49	51.88

Dist.	Dep.	Lat.												
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58 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.												
1	0.85	0.52	21	17.91	10.97	41	34.96	21.42	61	52.01	31.87	81	69.06	42.32
2	1.71	1.04	22	18.76	11.49	42	35.81	21.94	62	52.86	32.39	82	69.92	42.84
3	2.56	1.57	23	19.61	12.02	43	36.66	22.47	63	53.72	32.92	83	70.77	43.37
4	3.41	2.09	24	20.46	12.54	44	37.52	22.99	64	54.57	33.44	84	71.62	43.89
5	4.26	2.61	25	21.32	13.06	45	38.37	23.51	65	55.42	33.96	85	72.47	44.41
6	5.12	3.13	26	22.17	13.58	46	39.22	24.03	66	56.27	34.48	86	73.33	44.93
7	5.97	3.66	27	23.02	14.11	47	40.07	24.56	67	57.13	35.01	87	74.18	45.46
8	6.82	4.18	28	23.87	14.63	48	40.93	25.08	68	57.98	35.53	88	75.03	45.98
9	7.67	4.70	29	24.73	15.15	49	41.78	25.60	69	58.83	36.05	89	75.88	46.50
10	8.53	5.22	30	25.58	15.67	50	42.63	26.12	70	59.68	36.57	90	76.74	47.02
11	9.38	5.75	31	26.43	16.20	51	43.48	26.65	71	60.54	37.10	91	77.59	47.55
12	10.23	6.27	32	27.28	16.72	52	44.34	27.17	72	61.39	37.62	92	78.44	48.07
13	11.08	6.79	33	28.14	17.24	53	45.19	27.69	73	62.24	38.14	93	79.30	48.59
14	11.94	7.31	34	28.99	17.76	54	46.04	28.21	74	63.10	38.66	94	80.15	49.11
15	12.79	7.84	35	29.84	18.29	55	46.90	28.74	75	63.95	39.19	95	81.00	49.64
16	13.64	8.36	36	30.70	18.81	56	47.75	29.26	76	64.80	39.71	96	81.85	50.16
17	14.49	8.88	37	31.55	19.33	57	48.60	29.78	77	65.65	40.23	97	82.71	50.68
18	15.35	9.40	38	32.40	19.85	58	49.45	30.30	78	66.51	40.75	98	83.56	51.20
19	16.20	9.93	39	33.25	20.38	59	50.31	30.83	79	67.36	41.28	99	84.41	51.73
20	17.05	10.45	40	34.11	20.90	60	51.16	31.35	80	68.21	41.80	100	85.26	52.25

Dist.	Dep.	Lat.												
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58 $\frac{1}{2}$ DEGREES

31¾ DEGREES

Dist.	Lat.	Dep.												
1	0.85	0.53	21	17.86	11.05	41	34.86	21.57	61	51.87	32.10	81	68.88	42.62
2	1.70	1.05	22	18.71	11.58	42	35.71	22.10	62	52.72	32.63	82	69.73	43.15
3	2.55	1.58	23	19.56	12.10	43	36.57	22.63	63	53.57	33.15	83	70.58	43.68
4	3.40	2.10	24	20.41	12.63	44	37.42	23.15	64	54.42	33.68	84	71.43	44.20
5	4.25	2.63	25	21.26	13.16	45	38.27	23.68	65	55.27	34.20	85	72.28	44.73
6	5.10	3.16	26	22.11	13.68	46	39.12	24.21	66	56.12	34.73	86	73.13	45.25
7	5.95	3.68	27	22.96	14.21	47	39.97	24.73	67	56.98	35.26	87	73.98	45.78
8	6.80	4.21	28	23.81	14.73	48	40.82	25.26	68	57.82	35.78	88	74.83	46.31
9	7.65	4.74	29	24.66	15.26	49	41.67	25.78	69	58.67	36.31	89	75.68	46.83
10	8.50	5.26	30	25.51	15.79	50	42.52	26.31	70	59.52	36.83	90	76.53	47.36
11	9.35	5.79	31	26.36	16.31	51	43.37	26.84	71	60.37	37.36	91	77.38	47.89
12	10.20	6.31	32	27.21	16.84	52	44.22	27.36	72	61.23	37.89	92	78.23	48.41
13	11.05	6.84	33	28.06	17.37	53	45.07	27.89	73	62.08	38.41	93	79.08	48.94
14	11.90	7.37	34	28.91	17.89	54	45.92	28.42	74	62.93	38.94	94	79.93	49.47
15	12.76	7.89	35	29.76	18.42	55	46.77	28.94	75	63.78	39.47	95	80.78	49.99
16	13.61	8.42	36	30.61	18.94	56	47.62	29.47	76	64.63	39.99	96	81.63	50.52
17	14.46	8.95	37	31.46	19.47	57	48.47	29.99	77	65.48	40.52	97	82.48	51.04
18	15.31	9.47	38	32.31	20.00	58	49.32	30.52	78	66.33	41.04	98	83.33	51.57
19	16.16	10.00	39	33.16	20.52	59	50.17	31.05	79	67.18	41.57	99	84.18	52.10
20	17.01	10.52	40	34.01	21.05	60	51.02	31.57	80	68.03	42.10	100	85.04	52.62

Dist.	Dep.	Lat.												
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58¼ DEGREES

Dist.	Lat.	Dep.												
1	0.85	0.53	21	17.81	11.13	41	34.77	21.73	61	51.73	32.33	81	68.69	42.92
2	1.70	1.06	22	18.66	11.66	42	35.62	22.26	62	52.58	32.85	82	69.54	43.45
3	2.54	1.59	23	19.51	12.19	43	36.47	22.79	63	53.43	33.38	83	70.39	43.98
4	3.39	2.12	24	20.35	12.72	44	37.31	23.32	64	54.28	33.91	84	71.24	44.51
5	4.24	2.65	25	21.20	13.25	45	38.16	23.85	65	55.12	34.44	85	72.08	45.04
6	5.09	3.18	26	22.05	13.78	46	39.01	24.38	66	55.97	34.97	86	72.93	45.57
7	5.94	3.71	27	22.90	14.31	47	39.86	24.91	67	56.82	35.50	87	73.78	46.10
8	6.78	4.24	28	23.75	14.84	48	40.71	25.44	68	57.67	36.03	88	74.63	46.63
9	7.63	4.77	29	24.59	15.37	49	41.55	25.97	69	58.52	36.56	89	75.48	47.16
10	8.48	5.30	30	25.44	15.90	50	42.40	26.50	70	59.36	37.09	90	76.32	47.69
11	9.33	5.83	31	26.29	16.43	51	43.25	27.03	71	60.21	37.62	91	77.17	48.22
12	10.18	6.36	32	27.14	16.96	52	44.10	27.56	72	61.06	38.15	92	78.02	48.75
13	11.02	6.89	33	27.99	17.49	53	44.95	28.09	73	61.91	38.68	93	78.87	49.28
14	11.87	7.42	34	28.83	18.02	54	45.79	28.62	74	62.76	39.21	94	79.72	49.81
15	12.72	7.95	35	29.68	18.55	55	46.64	29.15	75	63.60	39.74	95	80.56	50.34
16	13.57	8.48	36	30.53	19.08	56	47.49	29.68	76	64.45	40.27	96	81.41	50.87
17	14.42	9.01	37	31.38	19.61	57	48.34	30.21	77	65.30	40.80	97	82.26	51.40
18	15.26	9.54	38	32.23	20.14	58	49.19	30.74	78	66.15	41.33	98	83.11	51.93
19	16.11	10.07	39	33.07	20.67	59	50.03	31.27	79	67.00	41.86	99	83.96	52.46
20	16.96	10.60	40	33.92	21.20	60	50.88	31.80	80	67.84	42.39	100	84.80	52.99

Dist.	Dep.	Lat.												
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58 DEGREES

TRAVERSE TABLE

32½ DEGREES

Dist.	Lat.	Dep.												
Dist.	Dep.	Lat.												
1	0.85	0.53	21	17.76	11.21	41	34.67	21.88	61	51.59	32.55	81	68.50	43.22
2	1.69	1.07	22	18.61	11.74	42	35.52	22.41	62	52.44	33.08	82	69.35	43.76
3	2.54	1.60	23	19.45	12.27	43	36.37	22.95	63	53.28	33.62	83	70.20	44.29
4	3.38	2.13	24	20.30	12.81	44	37.21	23.48	64	54.13	34.15	84	71.04	44.82
5	4.23	2.67	25	21.14	13.34	45	38.06	24.01	65	54.97	34.68	85	71.89	45.36
6	5.07	3.20	26	21.99	13.87	46	38.90	24.55	66	55.82	35.22	86	72.73	45.89
7	5.92	3.74	27	22.83	14.41	47	39.75	25.08	67	56.66	35.75	87	73.58	46.42
8	6.77	4.27	28	23.68	14.94	48	40.59	25.61	68	57.51	36.29	88	74.42	46.96
9	7.61	4.80	29	24.53	15.47	49	41.44	26.15	69	58.36	36.82	89	75.27	47.49
10	8.46	5.34	30	25.37	16.01	50	42.29	26.68	70	59.20	37.35	90	76.12	48.03
11	9.30	5.87	31	26.22	16.54	51	43.13	27.21	71	60.05	37.89	91	76.96	48.56
12	10.15	6.40	32	27.06	17.08	52	43.98	27.75	72	60.89	38.42	92	77.81	49.09
13	10.99	6.94	33	27.91	17.61	53	44.82	28.28	73	61.74	38.95	93	78.65	49.63
14	11.84	7.47	34	28.75	18.14	54	45.67	28.82	74	62.58	39.49	94	79.50	50.16
15	12.69	8.00	35	29.60	18.68	55	46.51	29.35	75	63.43	40.02	95	80.34	50.69
16	13.53	8.54	36	30.45	19.21	56	47.36	29.88	76	64.28	40.55	96	81.19	51.23
17	14.38	9.07	37	31.29	19.74	57	48.21	30.42	77	65.12	41.09	97	82.04	51.76
18	15.22	9.61	38	32.14	20.28	58	49.05	30.95	78	65.97	41.62	98	82.88	52.29
19	16.07	10.14	39	32.98	20.81	59	49.90	31.48	79	66.81	42.16	99	83.73	52.83
20	16.91	10.67	40	33.83	21.34	60	50.74	32.02	80	67.66	42.69	100	84.57	53.36

57¾ DEGREES

Dist.	Lat.	Dep.												
Dist.	Dep.	Lat.												
1	0.84	0.54	21	17.71	11.28	41	34.58	22.03	61	51.45	32.78	81	68.31	43.52
2	1.69	1.07	22	18.55	11.82	42	35.42	22.57	62	52.29	33.31	82	69.16	44.06
3	2.53	1.61	23	19.40	12.36	43	36.27	23.10	63	53.13	33.85	83	70.00	44.60
4	3.37	2.15	24	20.24	12.90	44	37.11	23.64	64	53.98	34.39	84	70.84	45.13
5	4.22	2.69	25	21.08	13.43	45	37.95	24.18	65	54.82	34.92	85	71.69	45.67
6	5.06	3.22	26	21.93	13.97	46	38.80	24.72	66	55.66	35.46	86	72.53	46.21
7	5.90	3.76	27	22.77	14.51	47	39.64	25.25	67	56.51	36.00	87	73.38	46.75
8	6.75	4.30	28	23.61	15.04	48	40.48	25.79	68	57.35	36.54	88	74.22	47.28
9	7.59	4.84	29	24.46	15.58	49	41.33	26.33	69	58.19	37.07	89	75.06	47.82
10	8.43	5.37	30	25.30	16.12	50	42.17	26.86	70	59.04	37.61	90	75.91	48.36
11	9.28	5.91	31	26.15	16.66	51	43.01	27.40	71	59.88	38.15	91	76.75	48.89
12	10.12	6.45	32	26.99	17.19	52	43.86	27.94	72	60.72	38.69	92	77.59	49.43
13	10.96	6.98	33	27.83	17.73	53	44.70	28.48	73	61.57	39.22	93	78.44	49.97
14	11.81	7.52	34	28.68	18.27	54	45.54	29.01	74	62.41	39.76	94	79.28	50.51
15	12.65	8.06	35	29.52	18.81	55	46.39	29.55	75	63.25	40.30	95	80.12	51.04
16	13.49	8.60	36	30.36	19.34	56	47.23	30.09	76	64.10	40.83	96	80.97	51.58
17	14.34	9.13	37	31.21	19.88	57	48.07	30.63	77	64.94	41.37	97	81.81	52.12
18	15.18	9.67	38	32.05	20.42	58	48.92	31.16	78	65.78	41.91	98	82.65	52.66
19	16.02	10.21	39	32.89	20.95	59	49.76	31.70	79	66.63	42.45	99	83.50	53.19
20	16.87	10.75	40	33.74	21.49	60	50.60	32.24	80	67.47	42.98	100	84.34	53.73

57½ DEGREES

32 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.												
1	0.84	0.54	21	17.66	11.36	41	34.48	22.18	61	51.30	33.00	81	68.12	43.82
2	1.68	1.08	22	18.50	11.90	42	35.32	22.72	62	52.14	33.54	82	68.97	44.36
3	2.52	1.62	23	19.34	12.44	43	36.16	23.20	63	52.99	34.08	83	69.81	44.90
4	3.36	2.16	24	20.18	12.98	44	37.01	23.80	64	53.83	34.62	84	70.65	45.44
5	4.21	2.70	25	21.03	13.52	45	37.85	24.34	65	54.67	35.16	85	71.49	45.98
6	5.05	3.25	26	21.87	14.07	46	38.69	24.88	66	55.51	35.70	86	72.33	46.52
7	5.89	3.79	27	22.71	14.61	47	39.53	25.43	67	56.35	36.25	87	73.17	47.06
8	6.73	4.33	28	23.55	15.15	48	40.37	25.97	68	57.19	36.79	88	74.01	47.61
9	7.57	4.87	29	24.39	15.69	49	41.21	26.51	69	58.03	37.33	89	74.85	48.15
10	8.41	5.41	30	25.23	16.23	50	42.05	27.05	70	58.87	37.87	90	75.69	48.69
11	9.25	5.95	31	26.07	16.77	51	42.89	27.59	71	59.71	38.41	91	76.53	49.23
12	10.09	6.49	32	26.91	17.31	52	43.73	28.13	72	60.55	38.95	92	77.38	49.77
13	10.93	7.03	33	27.75	17.85	53	44.58	28.67	73	61.40	39.49	93	78.22	50.31
14	11.77	7.57	34	28.60	18.39	54	45.42	29.21	74	62.24	40.03	94	79.06	50.85
15	12.62	8.11	35	29.44	18.93	55	46.26	29.75	75	63.08	40.57	95	79.90	51.39
16	13.46	8.66	36	30.28	19.48	56	47.10	30.29	76	63.92	41.11	96	80.74	51.93
17	14.30	9.20	37	31.12	20.02	57	47.94	30.84	77	64.76	41.65	97	81.58	52.47
18	15.14	9.74	38	31.96	20.56	58	48.78	31.38	78	65.60	42.20	98	82.42	53.02
19	15.98	10.28	39	32.80	21.10	59	49.62	31.92	79	66.44	42.74	99	83.26	53.56
20	16.82	10.82	40	33.64	21.64	60	50.46	32.46	80	67.28	43.28	100	84.10	54.10

57 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.												
1	0.84	0.54	21	17.61	11.44	41	34.39	22.33	61	51.16	33.22	81	67.93	44.12
2	1.68	1.09	22	18.45	11.98	42	35.22	22.87	62	52.00	33.77	82	68.77	44.66
3	2.52	1.63	23	19.29	12.53	43	36.06	23.42	63	52.84	34.31	83	69.61	45.20
4	3.36	2.18	24	20.13	13.07	44	36.90	23.96	64	53.67	34.86	84	70.45	45.75
5	4.21	2.72	25	20.97	13.62	45	37.74	24.51	65	54.51	35.40	85	71.29	46.29
6	5.05	3.27	26	21.81	14.16	46	38.58	25.05	66	55.35	35.95	86	72.13	46.84
7	5.89	3.81	27	22.64	14.71	47	39.42	25.60	67	56.19	36.49	87	72.96	47.38
8	6.73	4.36	28	23.48	15.25	48	40.26	26.14	68	57.03	37.04	88	73.80	47.93
9	7.57	4.90	29	24.32	15.79	49	41.09	26.69	69	57.87	37.58	89	74.64	48.47
10	8.41	5.45	30	25.16	16.34	50	41.93	27.23	70	58.71	38.12	90	75.48	49.02
11	9.25	5.99	31	26.00	16.88	51	42.77	27.78	71	59.55	38.67	91	76.32	49.56
12	10.09	6.54	32	26.84	17.43	52	43.61	28.32	72	60.38	39.21	92	77.16	50.11
13	10.93	7.08	33	27.68	17.97	53	44.45	28.87	73	61.22	39.76	93	78.00	50.65
14	11.77	7.62	34	28.51	18.52	54	45.29	29.41	74	62.06	40.30	94	78.83	51.20
15	12.62	8.17	35	29.35	19.06	55	46.13	29.96	75	62.90	40.85	95	79.67	51.74
16	13.42	8.71	36	30.19	19.61	56	46.97	30.50	76	63.74	41.39	96	80.51	52.29
17	14.26	9.26	37	31.03	20.15	57	47.80	31.04	77	64.58	41.94	97	81.35	52.83
18	15.10	9.80	38	31.87	20.70	58	48.64	31.59	78	65.42	42.48	98	82.19	53.37
19	15.93	10.35	39	32.71	21.24	59	49.48	32.13	79	66.25	43.03	99	83.03	53.92
20	16.77	10.89	40	33.55	21.79	60	50.32	32.68	80	67.09	43.57	100	83.87	54.46

57 DEGREES

TRAVERSE TABLE

33½ DEGREES

Dist.	Lat.	Dep.												
1	0.84	0.55	21	17.56	11.51	41	34.29	22.48	61	51.01	33.45	81	67.74	44.41
2	1.67	1.10	22	18.40	12.06	42	35.12	23.03	62	51.85	33.99	82	68.58	44.96
3	2.51	1.64	23	19.23	12.61	43	35.96	23.58	63	52.69	34.54	83	69.41	45.51
4	3.35	2.19	24	20.07	13.16	44	36.80	24.12	64	53.52	35.09	84	70.25	46.06
5	4.18	2.74	25	20.91	13.71	45	37.63	24.67	65	54.36	35.64	85	71.08	46.60
6	5.02	3.29	26	21.74	14.26	46	38.47	25.22	66	55.19	36.19	86	71.92	47.15
7	5.85	3.84	27	22.58	14.80	47	39.31	25.77	67	56.03	36.74	87	72.76	47.70
8	6.69	4.39	28	23.42	15.35	48	40.14	26.32	68	56.87	37.28	88	73.59	48.25
9	7.53	4.93	29	24.25	15.90	49	40.98	26.87	69	57.70	37.83	89	74.43	48.80
10	8.36	5.48	30	25.09	16.45	50	41.81	27.41	70	58.54	38.38	90	75.27	49.35
11	9.20	6.03	31	25.92	17.00	51	42.65	27.96	71	59.38	38.93	91	76.10	49.89
12	10.04	6.58	32	26.76	17.55	52	43.49	28.51	72	60.21	39.48	92	76.94	50.44
13	10.87	7.13	33	27.60	18.09	53	44.32	29.06	73	61.05	40.03	93	77.77	50.99
14	11.71	7.68	34	28.43	18.64	54	45.16	29.61	74	61.89	40.57	94	78.61	51.54
15	12.54	8.22	35	29.27	19.19	55	46.00	30.16	75	62.72	41.12	95	79.45	52.09
16	13.38	8.77	36	30.11	19.74	56	46.83	30.70	76	63.56	41.67	96	80.28	52.64
17	14.22	9.32	37	30.94	20.29	57	47.67	31.25	77	64.39	42.22	97	81.12	53.18
18	15.05	9.87	38	31.78	20.84	58	48.50	31.80	78	65.23	42.77	98	81.96	53.73
19	15.89	10.42	39	32.62	21.38	59	49.34	32.35	79	66.07	43.32	99	82.79	54.28
20	16.73	10.97	40	33.45	21.93	60	50.18	32.90	80	66.90	43.86	100	83.63	54.83
Dist.	Dep.	Lat.												

56¾ DEGREES

Dist.	Lat.	Dep.												
1	0.83	0.55	21	17.51	11.59	41	34.19	22.63	61	50.87	33.67	81	67.54	44.71
2	1.67	1.10	22	18.35	12.14	42	35.02	23.18	62	51.70	34.22	82	68.38	45.26
3	2.50	1.66	23	19.18	12.69	43	35.86	23.73	63	52.53	34.77	83	69.21	45.81
4	3.34	2.21	24	20.01	13.25	44	36.69	24.29	64	53.37	35.32	84	70.05	46.36
5	4.17	2.76	25	20.85	13.80	45	37.52	24.84	65	54.20	35.88	85	70.88	46.91
6	5.00	3.31	26	21.68	14.35	46	38.36	25.39	66	55.04	36.43	86	71.71	47.47
7	5.84	3.86	27	22.51	14.90	47	39.19	25.94	67	55.87	36.98	87	72.55	48.02
8	6.67	4.42	28	23.35	15.45	48	40.03	26.49	68	56.70	37.53	88	73.38	48.57
9	7.50	4.97	29	24.18	16.01	49	40.86	27.04	69	57.54	38.08	89	74.22	49.12
10	8.34	5.52	30	25.02	16.56	50	41.69	27.60	70	58.37	38.64	90	75.05	49.67
11	9.17	6.07	31	25.85	17.11	51	42.53	28.15	71	59.21	39.19	91	75.88	50.23
12	10.01	6.62	32	26.68	17.66	52	43.36	28.70	72	60.04	39.74	92	76.72	50.78
13	10.84	7.18	33	27.52	18.21	53	44.20	29.25	73	60.87	40.29	93	77.55	51.33
14	11.67	7.73	34	28.35	18.77	54	45.03	29.80	74	61.71	40.84	94	78.39	51.88
15	12.51	8.28	35	29.19	19.32	55	45.86	30.36	75	62.54	41.40	95	79.22	52.43
16	13.34	8.83	36	30.02	19.87	56	46.70	30.91	76	63.38	41.95	96	80.05	52.99
17	14.18	9.38	37	30.85	20.42	57	47.53	31.46	77	64.21	42.50	97	80.89	53.54
18	15.01	9.93	38	31.69	20.97	58	48.37	32.01	78	65.04	43.05	98	81.72	54.09
19	15.84	10.49	39	32.52	21.53	59	49.20	32.56	79	65.88	43.60	99	82.55	54.64
20	16.68	11.04	40	33.36	22.08	60	50.03	33.12	80	66.71	44.15	100	83.39	55.19
Dist.	Dep.	Lat.												

56½ DEGREES

TRAVERSE TABLE

97

333/4 DEGREES

Dist.	Lat.	Dep.												
Dist.	Dep.	Lat.												
1	0.83	0.56	21	17.46	11.67	41	34.09	22.78	61	50.72	33.89	81	67.35	45.00
2	1.66	1.11	22	18.29	12.22	42	34.92	23.33	62	51.55	34.45	82	68.18	45.56
3	2.49	1.67	23	19.12	12.78	43	35.75	23.89	63	52.38	35.00	83	69.01	46.11
4	3.33	2.22	24	19.96	13.33	44	36.58	24.45	64	53.21	35.56	84	69.84	46.67
5	4.16	2.78	25	20.79	13.89	45	37.42	25.00	65	54.05	36.11	85	70.67	47.22
6	4.99	3.33	26	21.62	14.44	46	38.25	25.56	66	54.88	36.67	86	71.51	47.78
7	5.82	3.89	27	22.45	15.00	47	39.08	26.11	67	55.71	37.22	87	72.34	48.33
8	6.65	4.44	28	23.28	15.56	48	39.91	26.67	68	56.54	37.78	88	73.17	48.89
9	7.48	5.00	29	24.11	16.11	49	40.74	27.22	69	57.37	38.33	89	74.00	49.45
10	8.31	5.56	30	24.94	16.67	50	41.57	27.78	70	58.20	38.89	90	74.83	50.00
11	9.15	6.11	31	25.78	17.22	51	42.40	28.33	71	59.03	39.45	91	75.66	50.56
12	9.98	6.67	32	26.61	17.78	52	43.24	28.89	72	59.87	40.00	92	76.50	51.11
13	10.81	7.22	33	27.44	18.33	53	44.07	29.45	73	60.70	40.56	93	77.33	51.67
14	11.64	7.78	34	28.27	18.89	54	44.90	30.00	74	61.53	41.11	94	78.16	52.22
15	12.47	8.33	35	29.10	19.44	55	45.73	30.56	75	62.36	41.67	95	78.99	52.78
16	13.30	8.89	36	29.93	20.00	56	46.56	31.11	76	63.19	42.22	96	79.82	53.33
17	14.13	9.44	37	30.76	20.56	57	47.39	31.67	77	64.02	42.78	97	80.65	53.89
18	14.97	10.00	38	31.60	21.11	58	48.23	32.22	78	64.85	43.33	98	81.48	54.45
19	15.80	10.56	39	32.43	21.67	59	49.06	32.78	79	65.69	43.89	99	82.32	55.00
20	16.63	11.11	40	33.26	22.22	60	49.89	33.33	80	66.52	44.45	100	83.15	55.56
Dist.	Dep.	Lat.												

56 1/4 DEGREES

Dist.	Lat.	Dep.												
Dist.	Dep.	Lat.												
1	0.83	0.56	21	17.41	11.74	41	33.99	22.93	61	50.57	34.11	81	67.15	45.29
2	1.66	1.12	22	18.24	12.30	42	34.82	23.49	62	51.40	34.67	82	67.98	45.85
3	2.49	1.68	23	19.07	12.86	43	35.65	24.05	63	52.23	35.23	83	68.81	46.41
4	3.32	2.24	24	19.90	13.42	44	36.48	24.60	64	53.06	35.79	84	69.64	46.97
5	4.15	2.80	25	20.73	13.98	45	37.31	25.16	65	53.89	36.35	85	70.47	47.53
6	4.99	3.36	26	21.55	14.54	46	38.14	25.72	66	54.72	36.91	86	71.30	48.09
7	5.82	3.91	27	22.38	15.10	47	38.96	26.28	67	55.55	37.46	87	72.13	48.65
8	6.65	4.47	28	23.21	15.66	48	39.79	26.84	68	56.37	38.03	88	72.96	49.21
9	7.48	5.03	29	24.04	16.22	49	40.62	27.40	69	57.20	38.58	89	73.78	49.77
10	8.31	5.59	30	24.87	16.78	50	41.45	27.96	70	58.03	39.14	90	74.61	50.33
11	9.12	6.15	31	25.70	17.33	51	42.28	28.52	71	58.86	39.70	91	75.44	50.89
12	9.95	6.71	32	26.53	17.89	52	43.11	29.08	72	59.69	40.26	92	76.27	51.45
13	10.78	7.27	33	27.36	18.45	53	43.94	29.64	73	60.52	40.82	93	77.10	52.00
14	11.61	7.83	34	28.19	19.01	54	44.77	30.20	74	61.35	41.38	94	77.93	52.56
15	12.44	8.39	35	29.02	19.57	55	45.60	30.76	75	62.18	41.94	95	78.76	53.12
16	13.26	8.95	36	29.85	20.13	56	46.43	31.31	76	63.01	42.50	96	79.59	53.68
17	14.09	9.51	37	30.67	20.69	57	47.26	31.87	77	63.84	43.06	97	80.42	54.24
18	14.92	10.07	38	31.50	21.25	58	48.08	32.43	78	64.66	43.62	98	81.25	54.80
19	15.75	10.62	39	32.33	21.81	59	48.91	32.99	79	65.49	44.18	99	82.07	55.36
20	16.58	11.18	40	33.16	22.37	60	49.74	33.55	80	66.32	44.74	100	82.90	55.92
Dist.	Dep.	Lat.												

56 DEGREES

TRAVERSE TABLE

34½ DEGREES

Dist.	Lat.	Dep.												
1	0.83	0.56	21	17.36	11.82	41	33.89	23.07	61	50.42	34.33	81	66.95	45.59
2	1.65	1.13	22	18.18	12.38	42	34.72	23.64	62	51.25	34.89	82	67.78	46.15
3	2.48	1.69	23	19.01	12.94	43	35.54	24.20	63	52.08	35.46	83	68.61	46.71
4	3.31	2.25	24	19.84	13.51	44	36.37	24.76	64	52.90	36.02	84	69.43	47.28
5	4.13	2.81	25	20.66	14.07	45	37.20	25.33	65	53.73	36.58	85	70.26	47.84
6	4.96	3.38	26	21.49	14.63	46	38.02	25.89	66	54.55	37.15	86	71.09	48.40
7	5.79	3.94	27	22.32	15.20	47	38.85	26.45	67	55.38	37.71	87	71.91	48.96
8	6.61	4.50	28	23.14	15.76	48	39.68	27.01	68	56.21	38.27	88	72.74	49.53
9	7.44	5.07	29	23.97	16.32	49	40.50	27.58	69	57.03	38.83	89	73.57	50.09
10	8.27	5.63	30	24.80	16.88	50	41.33	28.14	70	57.86	39.40	90	74.39	50.65
11	9.09	6.19	31	25.62	17.45	51	42.16	28.70	71	58.69	39.96	91	75.22	51.22
12	9.92	6.75	32	26.45	18.01	52	42.98	29.27	72	59.51	40.52	92	76.05	51.78
13	10.75	7.32	33	27.28	18.57	53	43.81	29.83	73	60.34	41.08	93	76.87	52.34
14	11.57	7.88	34	28.10	19.14	54	44.64	30.39	74	61.17	41.65	94	77.70	52.90
15	12.40	8.44	35	28.93	19.70	55	45.46	30.95	75	61.99	42.21	95	78.53	53.47
16	13.23	9.00	36	29.76	20.26	56	46.29	31.52	76	62.82	42.77	96	79.35	54.03
17	14.05	9.57	37	30.58	20.82	57	47.12	32.08	77	63.65	43.34	97	80.18	54.59
18	14.88	10.13	38	31.41	21.39	58	47.94	32.64	78	64.47	43.90	98	81.01	55.15
19	15.71	10.69	39	32.24	21.95	59	48.77	33.21	79	65.30	44.46	99	81.83	55.72
20	16.53	11.26	40	33.06	22.51	60	49.60	33.77	80	66.13	45.02	100	82.66	56.28
Dist.	Dep.	Lat.												

55¾ DEGREES

Dist.	Lat.	Dep.												
1	0.82	0.57	21	17.31	11.89	41	33.79	23.22	61	50.27	34.55	81	66.75	45.88
2	1.65	1.13	22	18.13	12.46	42	34.61	23.79	62	51.10	35.12	82	67.58	46.45
3	2.47	1.70	23	18.95	13.03	43	35.44	24.36	63	51.92	35.68	83	68.40	47.01
4	3.30	2.27	24	19.78	13.59	44	36.26	24.92	64	52.74	36.25	84	69.23	47.58
5	4.12	2.83	25	20.60	14.16	45	37.09	25.49	65	53.57	36.82	85	70.05	48.14
6	4.94	3.40	26	21.43	14.73	46	37.91	26.05	66	54.39	37.38	86	70.87	48.71
7	5.77	3.96	27	22.25	15.29	47	38.73	26.62	67	55.22	37.95	87	71.70	49.28
8	6.59	4.53	28	23.08	15.86	48	39.56	27.19	68	56.04	38.52	88	72.52	49.84
9	7.42	5.10	29	23.90	16.43	49	40.38	27.75	69	56.86	39.08	89	73.35	50.41
10	8.24	5.66	30	24.72	16.99	50	41.21	28.32	70	57.69	39.65	90	74.17	50.98
11	9.07	6.23	31	25.55	17.56	51	42.03	28.89	71	58.51	40.21	91	75.00	51.54
12	9.89	6.80	32	26.37	18.12	52	42.85	29.45	72	59.34	40.78	92	75.82	52.11
13	10.71	7.36	33	27.20	18.69	53	43.68	30.02	73	60.16	41.35	93	76.64	52.68
14	11.54	7.93	34	28.02	19.26	54	44.50	30.59	74	60.99	41.91	94	77.47	53.24
15	12.36	8.50	35	28.84	19.82	55	45.33	31.15	75	61.81	42.48	95	78.29	53.81
16	13.19	9.06	36	29.67	20.39	56	46.15	31.72	76	62.63	43.05	96	79.12	54.37
17	14.01	9.63	37	30.49	20.96	57	46.98	32.29	77	63.46	43.61	97	79.94	54.94
18	14.83	10.20	38	31.32	21.52	58	47.80	32.85	78	64.28	44.18	98	80.76	55.51
19	15.66	10.76	39	32.14	22.09	59	48.62	33.42	79	65.11	44.75	99	81.59	56.07
20	16.48	11.33	40	32.97	22.66	60	49.45	33.98	80	65.93	45.31	100	82.41	56.64
Dist.	Dep.	Lat.												

55½ DEGREES

34¾ DEGREES

Dist.	Lat.	Dep.												
1	0.82	0.57	21	17.25	11.97	41	33.69	23.37	61	50.12	34.77	81	66.55	46.17
2	1.64	1.14	22	18.08	12.54	42	34.51	23.94	62	50.94	35.34	82	67.37	46.74
3	2.46	1.71	23	18.90	13.11	43	35.33	24.51	63	51.76	35.91	83	68.20	47.31
4	3.29	2.28	24	19.72	13.68	44	36.15	25.08	64	52.59	36.38	84	69.02	47.88
5	4.11	2.85	25	20.54	14.25	45	36.97	25.65	65	53.41	37.05	85	69.84	48.45
6	4.93	3.42	26	21.36	14.82	46	37.80	26.22	66	54.23	37.62	86	70.66	49.02
7	5.75	3.99	27	22.18	15.39	47	38.62	26.79	67	55.05	38.19	87	71.48	49.59
8	6.57	4.56	28	23.01	15.96	48	39.44	27.36	68	55.87	38.76	88	72.30	50.16
9	7.39	5.13	29	23.83	16.53	49	40.26	27.93	69	56.69	39.33	89	73.13	50.73
10	8.22	5.70	30	24.65	17.10	50	41.08	28.50	70	57.52	39.90	90	73.95	51.30
11	9.04	6.27	31	25.47	17.67	51	41.90	29.07	71	58.34	40.47	91	74.77	51.87
12	9.86	6.84	32	26.29	18.24	52	42.73	29.64	72	59.16	41.04	92	75.59	52.44
13	10.68	7.41	33	27.11	18.81	53	43.55	30.21	73	59.98	41.61	93	76.41	53.01
14	11.50	7.98	34	27.94	19.38	54	44.37	30.78	74	60.80	42.18	94	77.23	53.58
15	12.32	8.55	35	28.76	19.95	55	45.19	31.35	75	61.62	42.75	95	78.06	54.15
16	13.15	9.12	36	29.58	20.52	56	46.01	31.92	76	62.45	43.32	96	78.88	54.72
17	13.97	9.69	37	30.40	21.09	57	46.83	32.49	77	63.27	43.89	97	79.70	55.29
18	14.79	10.26	38	31.22	21.66	58	47.66	33.06	78	64.09	44.46	98	80.52	55.86
19	15.61	10.83	39	32.04	22.23	59	48.48	33.63	79	64.91	45.03	99	81.34	56.43
20	16.43	11.40	40	32.87	22.80	60	49.30	34.20	80	65.73	45.60	100	82.16	57.00

Dist.	Dep.	Lat.												
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55¼ DEGREES

Dist.	Lat.	Dep.												
1	0.82	0.57	21	17.20	12.05	41	33.59	23.52	61	49.97	34.99	81	66.35	46.46
2	1.64	1.15	22	18.02	12.62	42	34.40	24.09	62	50.79	35.56	82	67.17	47.03
3	2.46	1.72	23	18.84	13.19	43	35.22	24.66	63	51.61	36.14	83	67.99	47.61
4	3.28	2.29	24	19.66	13.77	44	36.04	25.24	64	52.43	36.71	84	68.81	48.18
5	4.10	2.87	25	20.48	14.34	45	36.86	25.81	65	53.24	37.28	85	69.63	48.75
6	4.91	3.44	26	21.30	14.91	46	37.68	26.38	66	54.06	37.86	86	70.45	49.33
7	5.73	4.01	27	22.12	15.49	47	38.50	26.96	67	54.88	38.43	87	71.27	49.90
8	6.55	4.59	28	22.94	16.06	48	39.32	27.53	68	55.70	39.00	88	72.09	50.47
9	7.37	5.16	29	23.76	16.63	49	40.14	28.11	69	56.52	39.58	89	72.90	51.05
10	8.19	5.74	30	24.57	17.21	50	40.96	28.68	70	57.34	40.15	90	73.72	51.62
11	9.01	6.31	31	25.39	17.78	51	41.78	29.25	71	58.16	40.72	91	74.54	52.20
12	9.83	6.88	32	26.21	18.35	52	42.60	29.83	72	58.98	41.30	92	75.36	52.77
13	10.65	7.46	33	27.03	18.93	53	43.42	30.40	73	59.80	41.87	93	76.18	53.34
14	11.47	8.03	34	27.85	19.50	54	44.23	30.97	74	60.62	42.44	94	77.00	53.92
15	12.29	8.60	35	28.67	20.08	55	45.05	31.55	75	61.44	43.02	95	77.82	54.49
16	13.11	9.18	36	29.49	20.65	56	45.87	32.12	76	62.26	43.59	96	78.64	55.06
17	13.93	9.75	37	30.31	21.22	57	46.69	32.69	77	63.07	44.17	97	79.46	55.64
18	14.74	10.32	38	31.13	21.80	58	47.51	33.27	78	63.89	44.74	98	80.28	56.21
19	15.56	10.90	39	31.95	22.37	59	48.33	33.84	79	64.71	45.31	99	81.10	56.78
20	16.38	11.47	40	32.77	22.94	60	49.15	34.41	80	65.53	45.89	100	81.92	57.36

Dist.	Dep.	Lat.												
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55 DEGREES

TRAVERSE TABLE

35½ DEGREES

Dist.	Lat.	Dep.												
1	0.82	0.58	21	17.15	12.12	41	33.48	23.66	61	49.82	35.21	81	66.15	46.75
2	1.63	1.15	22	17.97	12.70	42	34.30	24.24	62	50.63	35.78	82	66.96	47.33
3	2.45	1.73	23	18.78	13.27	43	35.12	24.82	63	51.45	36.36	83	67.78	47.90
4	3.27	2.31	24	19.60	13.85	44	35.93	25.39	64	52.27	36.94	84	68.60	48.48
5	4.08	2.89	25	20.42	14.43	45	36.75	25.97	65	53.08	37.51	85	69.41	49.06
6	4.90	3.46	26	21.23	15.01	46	37.57	26.55	66	53.90	38.09	86	70.23	49.63
7	5.72	4.04	27	22.05	15.58	47	38.38	27.13	67	54.71	38.67	87	71.05	50.21
8	6.53	4.62	28	22.87	16.16	48	39.20	27.70	68	55.53	39.25	88	71.86	50.79
9	7.35	5.19	29	23.68	16.74	49	40.02	28.28	69	56.35	39.82	89	72.68	51.37
10	8.17	5.77	30	24.50	17.31	50	40.83	28.86	70	57.16	40.40	90	73.50	51.94
11	8.98	6.35	31	25.32	17.89	51	41.65	29.43	71	57.98	40.98	91	74.31	52.52
12	9.80	6.93	32	26.13	18.47	52	42.47	30.01	72	58.80	41.55	92	75.13	53.10
13	10.62	7.50	33	26.95	19.05	53	43.28	30.59	73	59.61	42.13	93	75.95	53.67
14	11.43	8.08	34	27.77	19.62	54	44.10	31.17	74	60.43	42.71	94	76.76	54.25
15	12.25	8.66	35	28.58	20.20	55	44.92	31.74	75	61.25	43.29	95	77.58	54.83
16	13.07	9.23	36	29.40	20.78	56	45.73	32.32	76	62.06	43.86	96	78.40	55.41
17	13.88	9.81	37	30.22	21.35	57	46.55	32.90	77	62.88	44.44	97	79.21	55.98
18	14.70	10.39	38	31.03	21.93	58	47.37	33.47	78	63.70	45.02	98	80.03	56.56
19	15.52	10.97	39	31.85	22.51	59	48.18	34.05	79	64.51	45.59	99	80.85	57.14
20	16.33	11.54	40	32.67	23.09	60	49.00	34.63	80	65.33	46.17	100	81.66	57.71
Dist.	Dep.	Lat.												

54¾ DEGREES

Dist.	Lat.	Dep.												
1	0.81	0.58	21	17.10	12.19	41	33.38	23.81	61	49.66	35.42	81	65.94	47.04
2	1.63	1.16	22	17.91	12.78	42	34.19	24.39	62	50.48	36.00	82	66.76	47.62
3	2.44	1.74	23	18.72	13.36	43	35.01	24.97	63	51.29	36.58	83	67.57	48.20
4	3.26	2.32	24	19.54	13.94	44	35.82	25.55	64	52.10	37.16	84	68.39	48.78
5	4.07	2.90	25	20.35	14.52	45	36.64	26.13	65	52.92	37.75	85	69.20	49.36
6	4.88	3.48	26	21.17	15.10	46	37.45	26.71	66	53.73	38.33	86	70.01	49.94
7	5.70	4.06	27	21.98	15.68	47	38.26	27.29	67	54.55	38.91	87	70.83	50.52
8	6.51	4.65	28	22.80	16.26	48	39.08	27.87	68	55.36	39.49	88	71.64	51.10
9	7.33	5.23	29	23.61	16.84	49	39.89	28.45	69	56.17	40.07	89	72.46	51.68
10	8.14	5.81	30	24.42	17.42	50	40.71	29.04	70	56.99	40.65	90	73.27	52.26
11	8.96	6.39	31	25.24	18.00	51	41.52	29.62	71	57.80	41.23	91	74.08	52.84
12	9.77	6.97	32	26.05	18.58	52	42.33	30.20	72	58.62	41.81	92	74.90	53.42
13	10.58	7.55	33	26.87	19.16	53	43.15	30.78	73	59.43	42.39	93	75.71	54.01
14	11.40	8.13	34	27.68	19.74	54	43.96	31.36	74	60.24	42.97	94	76.53	54.59
15	12.21	8.71	35	28.49	20.32	55	44.78	31.94	75	61.06	43.55	95	77.34	55.17
16	13.03	9.29	36	29.31	20.91	56	45.59	32.52	76	61.87	44.13	96	78.16	55.75
17	13.84	9.87	37	30.12	21.49	57	46.40	33.10	77	62.69	44.71	97	78.97	56.33
18	14.65	10.45	38	30.94	22.07	58	47.22	33.68	78	63.50	45.29	98	79.78	56.91
19	15.47	11.03	39	31.75	22.65	59	48.03	34.26	79	64.32	45.88	99	80.60	57.49
20	16.28	11.61	40	32.56	23.23	60	48.85	34.84	80	65.13	46.46	100	81.41	58.07
Dist.	Dep.	Lat.												

54½ DEGREES

35¾ DEGREES

Dist.	Lat.	Dep.												
1	0.81	0.58	21	17.04	12.27	41	33.27	23.95	61	49.51	35.64	81	65.74	47.32
2	1.62	1.17	22	17.85	12.85	42	34.09	24.54	62	50.32	36.22	82	66.55	47.91
3	2.43	1.75	23	18.67	13.44	43	34.90	25.12	63	51.13	36.81	83	67.36	48.49
4	3.25	2.34	24	19.48	14.02	44	35.71	25.71	64	51.94	37.39	84	68.17	49.08
5	4.06	2.92	25	20.29	14.61	45	36.52	26.29	65	52.75	37.98	85	68.98	49.66
6	4.87	3.51	26	21.10	15.19	46	37.33	26.88	66	53.56	38.56	86	69.80	50.25
7	5.68	4.09	27	21.91	15.77	47	38.14	27.46	67	54.38	39.14	87	70.61	50.83
8	6.49	4.67	28	22.72	16.36	48	38.96	28.04	68	55.19	39.73	88	71.42	51.41
9	7.30	5.26	29	23.54	16.94	49	39.77	28.63	69	56.00	40.31	89	72.23	52.00
10	8.12	5.84	30	24.35	17.53	50	40.58	29.21	70	56.81	40.90	90	73.04	52.58
11	8.93	6.43	31	25.16	18.11	51	41.39	29.80	71	57.62	41.48	91	73.85	53.17
12	9.74	7.01	32	25.97	18.70	52	42.20	30.38	72	58.43	42.07	92	74.66	53.75
13	10.55	7.60	33	26.78	19.28	53	43.01	30.97	73	59.24	42.65	93	75.48	54.34
14	11.36	8.18	34	27.59	19.86	54	43.82	31.55	74	60.06	43.23	94	76.29	54.92
15	12.17	8.76	35	28.41	20.45	55	44.64	32.13	75	60.87	43.82	95	77.10	55.50
16	12.99	9.35	36	29.22	21.03	56	45.45	32.72	76	61.68	44.40	96	77.91	56.09
17	13.80	9.93	37	30.03	21.62	57	46.26	33.30	77	62.49	44.99	97	78.72	56.67
18	14.61	10.52	38	30.84	22.20	58	47.07	33.89	78	63.30	45.57	98	79.53	57.26
19	15.42	11.10	39	31.65	22.79	59	47.88	34.47	79	64.11	46.16	99	80.35	57.84
20	16.23	11.68	40	32.46	23.37	60	48.69	35.05	80	64.93	46.74	100	81.16	58.42
Dist.	Dep.	Lat.												

54¼ DEGREES

Dist.	Lat.	Dep.												
1	0.81	0.59	21	16.99	12.34	41	33.17	24.10	61	49.35	35.85	81	65.53	47.61
2	1.62	1.18	22	17.80	12.93	42	33.98	24.69	62	50.16	36.44	82	66.34	48.20
3	2.43	1.76	23	18.61	13.52	43	34.79	25.27	63	50.97	37.03	83	67.15	48.79
4	3.25	2.35	24	19.42	14.11	44	35.60	25.86	64	51.78	37.62	84	67.96	49.37
5	4.06	2.94	25	20.23	14.69	45	36.41	26.45	65	52.59	38.21	85	68.77	49.96
6	4.87	3.53	26	21.03	15.28	46	37.21	27.04	66	53.40	38.79	86	69.58	50.55
7	5.68	4.11	27	21.84	15.87	47	38.02	27.63	67	54.20	39.38	87	70.38	51.14
8	6.49	4.70	28	22.65	16.46	48	38.83	28.21	68	55.01	39.97	88	71.19	51.73
9	7.30	5.29	29	23.46	17.05	49	39.64	28.80	69	55.82	40.56	89	72.00	52.31
10	8.12	5.88	30	24.27	17.63	50	40.45	29.39	70	56.63	41.14	90	72.81	52.90
11	8.93	6.47	31	25.08	18.22	51	41.26	29.98	71	57.44	41.73	91	73.62	53.49
12	9.74	7.05	32	25.89	18.81	52	42.07	30.56	72	58.25	42.32	92	74.43	54.08
13	10.55	7.64	33	26.70	19.40	53	42.88	31.15	73	59.06	42.91	93	75.24	54.66
14	11.36	8.23	34	27.51	19.98	54	43.69	31.74	74	59.87	43.50	94	76.05	55.25
15	12.17	8.82	35	28.32	20.57	55	44.50	32.33	75	60.68	44.08	95	76.86	55.84
16	12.99	9.40	36	29.12	21.16	56	45.30	32.92	76	61.49	44.67	96	77.67	56.43
17	13.80	9.99	37	29.93	21.75	57	46.11	33.50	77	62.29	45.26	97	78.47	57.02
18	14.61	10.58	38	30.74	22.34	58	46.92	34.09	78	63.10	45.85	98	79.28	57.60
19	15.42	11.17	39	31.55	22.92	59	47.73	34.68	79	63.91	46.43	99	80.09	58.19
20	16.23	11.76	40	32.36	23.51	60	48.54	35.27	80	64.72	47.02	100	80.90	58.78
Dist.	Dep.	Lat.												

54 DEGREES

TRAVERSE TABLE

36½ DEGREES

Dist.	Lat.	Dep.												
1	0.81	0.59	21	16.94	12.42	41	33.06	24.24	61	49.19	36.07	81	65.32	47.90
2	1.61	1.18	22	17.74	13.01	42	33.87	24.83	62	50.00	36.66	82	66.13	48.49
3	2.42	1.77	23	18.55	13.60	43	34.68	25.43	63	50.81	37.25	83	66.93	49.08
4	3.23	2.37	24	19.35	14.19	44	35.48	26.02	64	51.61	37.84	84	67.74	49.67
5	4.03	2.96	25	20.16	14.78	45	36.29	26.61	65	52.42	38.44	85	68.55	50.26
6	4.84	3.55	26	20.97	15.37	46	37.10	27.20	66	53.23	39.03	86	69.35	50.85
7	5.65	4.14	27	21.77	15.97	47	37.90	27.79	67	54.03	39.62	87	70.16	51.44
8	6.45	4.73	28	22.58	16.56	48	38.71	28.38	68	54.84	40.21	88	70.97	52.04
9	7.26	5.32	29	23.39	17.15	49	39.52	28.97	69	55.64	40.80	89	71.77	52.63
10	8.06	5.91	30	24.19	17.74	50	40.32	29.57	70	56.45	41.39	90	72.58	53.22
11	8.87	6.50	31	25.00	18.33	51	41.13	30.16	71	57.26	41.98	91	73.39	53.81
12	9.68	7.10	32	25.81	18.92	52	41.94	30.75	72	58.06	42.57	92	74.19	54.40
13	10.48	7.69	33	26.61	19.51	53	42.74	31.34	73	58.87	43.17	93	75.00	54.99
14	11.29	8.28	34	27.42	20.10	54	43.55	31.93	74	59.68	43.76	94	75.81	55.58
15	12.10	8.87	35	28.23	20.70	55	44.35	32.52	75	60.48	44.35	95	76.61	56.17
16	12.90	9.46	36	29.03	21.29	56	45.16	33.11	76	61.29	44.94	96	77.42	56.77
17	13.71	10.05	37	29.84	21.88	57	45.97	33.70	77	62.10	45.53	97	78.23	57.36
18	14.52	10.64	38	30.64	22.47	58	46.77	34.30	78	62.90	46.12	98	79.03	57.95
19	15.32	11.23	39	31.45	23.06	59	47.58	34.89	79	63.71	46.71	99	79.84	58.54
20	16.13	11.83	40	32.26	23.65	60	48.39	35.48	80	64.52	47.30	100	80.64	59.13

53¾ DEGREES

Dist.	Lat.	Dep.												
1	0.80	0.59	21	16.88	12.49	41	32.96	24.39	61	49.04	36.28	81	65.11	48.18
2	1.61	1.19	22	17.68	13.09	42	33.76	24.98	62	49.84	36.88	82	65.92	48.78
3	2.41	1.78	23	18.49	13.68	43	34.57	25.58	63	50.64	37.47	83	66.72	49.37
4	3.22	2.38	24	19.29	14.28	44	35.37	26.17	64	51.45	38.07	84	67.52	49.97
5	4.02	2.97	25	20.10	14.87	45	36.17	26.77	65	52.25	38.66	85	68.33	50.56
6	4.82	3.57	26	20.90	15.47	46	36.98	27.36	66	53.05	39.26	86	69.13	51.15
7	5.63	4.16	27	21.70	16.06	47	37.78	27.96	67	53.86	39.85	87	69.94	51.75
8	6.43	4.76	28	22.51	16.65	48	38.59	28.55	68	54.66	40.45	88	70.74	52.34
9	7.23	5.35	29	23.31	17.25	49	39.39	29.15	69	55.47	41.04	89	71.54	52.94
10	8.04	5.95	30	24.12	17.84	50	40.19	29.74	70	56.27	41.64	90	72.35	53.53
11	8.84	6.54	31	24.92	18.44	51	41.00	30.34	71	57.07	42.23	91	73.15	54.13
12	9.65	7.14	32	25.72	19.03	52	41.80	30.93	72	57.88	42.83	92	73.95	54.72
13	10.45	7.73	33	26.53	19.63	53	42.60	31.53	73	58.68	43.42	93	74.76	55.32
14	11.25	8.33	34	27.33	20.22	54	43.41	32.12	74	59.49	44.02	94	75.56	55.91
15	12.06	8.92	35	28.13	20.82	55	44.21	32.72	75	60.29	44.61	95	76.37	56.51
16	12.86	9.52	36	28.94	21.41	56	45.02	33.31	76	61.09	45.21	96	77.17	57.10
17	13.67	10.11	37	29.74	22.01	57	45.82	33.90	77	61.90	45.80	97	77.97	57.70
18	14.47	10.71	38	30.55	22.60	58	46.62	34.50	78	62.70	46.40	98	78.78	58.29
19	15.27	11.30	39	31.35	23.20	59	47.43	35.09	79	63.50	46.99	99	79.58	58.89
20	16.08	11.90	40	32.15	23.79	60	48.23	35.69	80	64.31	47.59	100	80.39	59.48

53½ DEGREES

363/4 DEGREES

Dist.	Lat.	Dep.												
1	0.80	0.60	21	16.83	12.56	41	32.85	24.53	61	48.88	36.50	81	64.90	48.46
2	1.60	1.20	22	17.63	13.16	42	33.65	25.13	62	49.68	37.10	82	65.70	49.06
3	2.40	1.79	23	18.43	13.76	43	34.45	25.73	63	50.48	37.69	83	66.50	49.66
4	3.20	2.39	24	19.23	14.36	44	35.26	26.33	64	51.28	38.29	84	67.31	50.26
5	4.01	2.99	25	20.03	14.96	45	36.06	26.92	65	52.08	38.89	85	68.11	50.86
6	4.81	3.59	26	20.83	15.56	46	36.86	27.52	66	52.88	39.49	86	68.91	51.46
7	5.61	4.19	27	21.63	16.15	47	37.66	28.12	67	53.68	40.09	87	69.71	52.05
8	6.41	4.79	28	22.44	16.75	48	38.46	28.72	68	54.49	40.69	88	70.51	52.65
9	7.21	5.38	29	23.24	17.35	49	39.26	29.32	69	55.29	41.28	89	71.31	53.25
10	8.01	5.98	30	24.04	17.95	50	40.06	29.92	70	56.09	41.88	90	72.11	53.85
11	8.81	6.58	31	24.84	18.55	51	40.86	30.51	71	56.89	42.48	91	72.91	54.45
12	9.61	7.18	32	25.64	19.15	52	41.67	31.11	72	57.69	43.08	92	73.72	55.05
13	10.42	7.78	33	26.44	19.74	53	42.47	31.71	73	58.49	43.68	93	74.52	55.64
14	11.22	8.38	34	27.24	20.34	54	43.27	32.31	74	59.29	44.28	94	75.32	56.24
15	12.02	8.97	35	28.04	20.94	55	44.07	32.91	75	60.09	44.87	95	76.12	56.84
16	12.82	9.57	36	28.85	21.54	56	44.87	33.51	76	60.90	45.47	96	76.92	57.44
17	13.62	10.17	37	29.65	22.14	57	45.67	34.10	77	61.70	46.07	97	77.72	58.04
18	14.42	10.77	38	30.45	22.74	58	46.47	34.70	78	62.50	46.67	98	78.52	58.64
19	15.22	11.37	39	31.25	23.33	59	47.27	35.30	79	63.30	47.27	99	79.32	59.23
20	16.03	11.97	40	32.05	23.93	60	48.08	35.90	80	64.10	47.87	100	80.13	59.83

Dist.	Dep.	Lat.												
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53 1/4 DEGREES

Dist.	Lat.	Dep.												
1	0.80	0.60	21	16.77	12.64	41	32.74	24.67	61	48.72	36.71	81	64.69	48.75
2	1.60	1.20	22	17.57	13.24	42	33.54	25.28	62	49.52	37.31	82	65.49	49.35
3	2.40	1.81	23	18.37	13.84	43	34.34	25.88	63	50.31	37.91	83	66.29	49.95
4	3.19	2.41	24	19.17	14.44	44	35.14	26.48	64	51.11	38.52	84	67.09	50.55
5	3.99	3.01	25	19.97	15.05	45	35.94	27.08	65	51.91	39.12	85	67.88	51.15
6	4.79	3.61	26	20.76	15.65	46	36.74	27.68	66	52.71	39.72	86	68.68	51.76
7	5.59	4.21	27	21.56	16.25	47	37.54	28.29	67	53.51	40.32	87	69.48	52.36
8	6.39	4.81	28	22.36	16.85	48	38.33	28.89	68	54.31	40.92	88	70.28	52.96
9	7.19	5.42	29	23.16	17.45	49	39.13	29.49	69	55.11	41.53	89	71.08	53.56
10	7.99	6.02	30	23.96	18.05	50	39.93	30.09	70	55.90	42.13	90	71.88	54.16
11	8.78	6.62	31	24.76	18.66	51	40.73	30.69	71	56.70	42.73	91	72.68	54.77
12	9.58	7.22	32	25.56	19.26	52	41.53	31.29	72	57.50	43.33	92	73.47	55.37
13	10.38	7.82	33	26.35	19.86	53	42.33	31.90	73	58.30	43.93	93	74.27	55.97
14	11.18	8.43	34	27.15	20.46	54	43.13	32.50	74	59.10	44.53	94	75.07	56.57
15	11.98	9.03	35	27.95	21.06	55	43.92	33.10	75	59.90	45.14	95	75.87	57.17
16	12.78	9.63	36	28.75	21.67	56	44.72	33.70	76	60.70	45.74	96	76.67	57.77
17	13.58	10.23	37	29.55	22.27	57	45.52	34.30	77	61.49	46.34	97	77.47	58.38
18	14.38	10.83	38	30.35	22.87	58	46.32	34.91	78	62.29	46.94	98	78.27	58.98
19	15.17	11.43	39	31.15	23.47	59	47.12	35.51	79	63.09	47.54	99	79.06	59.58
20	15.97	12.04	40	31.95	24.07	60	47.92	36.11	80	63.89	48.15	100	79.86	60.18

Dist.	Dep.	Lat.												
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53 DEGREES

TRAVERSE TABLE

37 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.												
1	0.80	0.61	21	16.72	12.71	41	32.64	24.82	61	48.56	36.92	81	64.48	49.03
2	1.59	1.21	22	17.51	13.32	42	33.43	25.42	62	49.35	37.53	82	65.27	49.63
3	2.39	1.82	23	18.31	13.92	43	34.23	26.03	63	50.15	38.13	83	66.07	50.24
4	3.18	2.42	24	19.10	14.53	44	35.02	26.63	64	50.94	38.74	84	66.86	50.84
5	3.98	3.03	25	19.90	15.13	45	35.82	27.24	65	51.74	39.34	85	67.66	51.45
6	4.78	3.63	26	20.70	15.74	46	36.62	27.84	66	52.54	39.95	86	68.46	52.06
7	5.57	4.24	27	21.49	16.34	47	37.41	28.45	67	53.33	40.55	87	69.25	52.66
8	6.37	4.84	28	22.29	16.95	48	38.21	29.05	68	54.13	41.16	88	70.05	53.27
9	7.16	5.45	29	23.08	17.55	49	39.00	29.66	69	54.92	41.77	89	70.84	53.87
10	7.96	6.05	30	23.88	18.16	50	39.80	30.26	70	55.72	42.37	90	71.64	54.48
11	8.76	6.66	31	24.68	18.76	51	40.60	30.87	71	56.52	42.98	91	72.44	55.08
12	9.55	7.26	32	25.47	19.37	52	41.39	31.48	72	57.31	43.58	92	73.23	55.69
13	10.35	7.87	33	26.27	19.97	53	42.19	32.08	73	58.11	44.19	93	74.03	56.29
14	11.14	8.47	34	27.06	20.58	54	42.98	32.69	74	58.90	44.79	94	74.82	56.90
15	11.94	9.08	35	27.86	21.19	55	43.78	33.29	75	59.70	45.40	95	75.62	57.50
16	12.74	9.68	36	28.66	21.79	56	44.58	33.90	76	60.50	46.00	96	76.42	58.11
17	13.53	10.29	37	29.45	22.40	57	45.37	34.50	77	61.29	46.61	97	77.21	58.71
18	14.33	10.90	38	30.25	23.00	58	46.17	35.11	78	62.09	47.21	98	78.01	59.32
19	15.12	11.50	39	31.04	23.61	59	46.96	35.71	79	62.88	47.82	99	78.80	59.92
20	15.92	12.11	40	31.84	24.21	60	47.76	36.32	80	63.68	48.42	100	79.60	60.53
Dist.	Dep.	Lat.												

52 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.												
1	0.79	0.61	21	16.66	12.78	41	32.53	24.96	61	48.39	37.13	81	64.26	49.31
2	1.59	1.22	22	17.45	13.39	42	33.32	25.57	62	49.19	37.74	82	65.05	49.92
3	2.38	1.83	23	18.25	14.00	43	34.11	26.18	63	49.98	38.35	83	65.85	50.53
4	3.17	2.43	24	19.04	14.61	44	34.91	26.79	64	50.77	38.96	84	66.64	51.14
5	3.97	3.04	25	19.83	15.22	45	35.70	27.39	65	51.57	39.57	85	67.43	51.74
6	4.76	3.65	26	20.63	15.83	46	36.49	28.00	66	52.36	40.18	86	68.23	52.35
7	5.55	4.26	27	21.42	16.44	47	37.29	28.61	67	53.15	40.79	87	69.02	52.96
8	6.35	4.87	28	22.21	17.05	48	38.08	29.22	68	53.95	41.40	88	69.82	53.57
9	7.14	5.48	29	23.01	17.65	49	38.87	29.83	69	54.74	42.00	89	70.61	54.18
10	7.93	6.09	30	23.80	18.26	50	39.67	30.44	70	55.53	42.61	90	71.40	54.79
11	8.73	6.70	31	24.59	18.87	51	40.46	31.05	71	56.33	43.22	91	72.20	55.40
12	9.52	7.31	32	25.39	19.48	52	41.25	31.66	72	57.12	43.83	92	72.99	56.01
13	10.31	7.91	33	26.18	20.09	53	42.05	32.26	73	57.91	44.44	93	73.78	56.61
14	11.11	8.52	34	26.97	20.70	54	42.84	32.87	74	58.71	45.05	94	74.58	57.22
15	11.90	9.13	35	27.77	21.31	55	43.63	33.48	75	59.50	45.66	95	75.37	57.83
16	12.69	9.74	36	28.56	21.92	56	44.43	34.09	76	60.29	46.27	96	76.16	58.44
17	13.49	10.35	37	29.35	22.52	57	45.22	34.70	77	61.09	46.87	97	76.96	59.05
18	14.28	10.96	38	30.15	23.13	58	46.01	35.31	78	61.88	47.48	98	77.75	59.66
19	15.07	11.57	39	30.94	23.74	59	46.81	35.92	79	62.67	48.09	99	78.54	60.27
20	15.87	12.18	40	31.73	24.35	60	47.60	36.53	80	63.47	48.70	100	79.34	60.88
Dist.	Dep.	Lat.												

52 $\frac{1}{2}$ DEGREES

37½ DEGREES

Dist.	Lat.	Dep.												
1	0.79	0.61	21	16.60	12.86	41	32.42	25.10	61	48.24	37.35	81	64.05	49.59
2	1.58	1.22	22	17.40	13.47	42	33.21	25.71	62	49.02	37.96	82	64.84	50.20
3	2.37	1.84	23	18.19	14.08	43	34.00	26.33	63	49.81	38.57	83	65.63	50.81
4	3.16	2.45	24	18.98	14.69	44	34.79	26.94	64	50.60	39.18	84	66.42	51.43
5	3.95	3.06	25	19.77	15.31	45	35.58	27.55	65	51.39	39.79	85	67.21	52.04
6	4.74	3.67	26	20.56	15.92	46	36.37	28.16	66	52.19	40.41	86	68.00	52.65
7	5.53	4.29	27	21.35	16.53	47	37.16	28.77	67	52.98	41.02	87	68.79	53.26
8	6.33	4.90	28	22.14	17.14	48	37.95	29.39	68	53.77	41.63	88	69.58	53.88
9	7.12	5.51	29	22.93	17.75	49	38.74	30.00	69	54.56	42.24	89	70.37	54.49
10	7.91	6.12	30	23.72	18.37	50	39.53	30.61	70	55.35	42.86	90	71.16	55.10
11	8.70	6.73	31	24.51	18.98	51	40.33	31.22	71	56.14	43.47	91	71.95	55.71
12	9.49	7.35	32	25.30	19.59	52	41.12	31.84	72	56.93	44.08	92	72.74	56.32
13	10.28	7.96	33	26.09	20.20	53	41.91	32.45	73	57.72	44.69	93	73.53	56.94
14	11.07	8.57	34	26.88	20.82	54	42.70	33.06	74	58.51	45.30	94	74.32	57.55
15	11.86	9.18	35	27.67	21.43	55	43.49	33.67	75	59.30	45.92	95	75.12	58.16
16	12.65	9.80	36	28.46	22.04	56	44.28	34.28	76	60.09	46.53	96	75.91	58.77
17	13.44	10.41	37	29.26	22.65	57	45.07	34.90	77	60.88	47.14	97	76.70	59.39
18	14.23	11.02	38	30.05	23.26	58	45.86	35.51	78	61.67	47.75	98	77.49	60.00
19	15.02	11.63	39	30.84	23.88	59	46.65	36.12	79	62.46	48.37	99	78.28	60.61
20	15.81	12.24	40	31.63	24.49	60	47.44	36.73	80	63.26	48.98	100	79.07	61.22
Dist.	Dep.	Lat.												

52½ DEGREES

Dist.	Lat.	Dep.												
1	0.79	0.62	21	16.55	12.93	41	32.31	25.24	61	48.07	37.56	81	63.83	49.87
2	1.58	1.23	22	17.34	13.54	42	33.10	25.86	62	48.86	38.17	82	64.62	50.48
3	2.37	1.85	23	18.12	14.16	43	33.88	26.47	63	49.64	38.79	83	65.40	51.10
4	3.16	2.46	24	18.91	14.78	44	34.67	27.09	64	50.43	39.40	84	66.19	51.72
5	3.95	3.08	25	19.70	15.39	45	35.46	27.70	65	51.22	40.02	85	66.98	52.33
6	4.73	3.69	26	20.49	16.01	46	36.25	28.32	66	52.01	40.63	86	67.77	52.95
7	5.52	4.31	27	21.28	16.62	47	37.04	28.94	67	52.80	41.25	87	68.56	53.56
8	6.30	4.93	28	22.06	17.24	48	37.82	29.55	68	53.58	41.86	88	69.34	54.18
9	7.09	5.54	29	22.85	17.85	49	38.61	30.17	69	54.37	42.48	89	70.13	54.79
10	7.88	6.16	30	23.64	18.47	50	39.40	30.78	70	55.16	43.10	90	70.92	55.41
11	8.67	6.77	31	24.43	19.09	51	40.19	31.40	71	55.95	43.71	91	71.71	56.03
12	9.46	7.39	32	25.22	19.70	52	40.98	32.01	72	56.74	44.33	92	72.50	56.64
13	10.24	8.00	33	26.00	20.32	53	41.76	32.63	73	57.52	44.94	93	73.28	57.26
14	11.03	8.62	34	26.79	20.93	54	42.55	33.25	74	58.31	45.56	94	74.07	57.87
15	11.82	9.23	35	27.58	21.55	55	43.34	33.86	75	59.10	46.17	95	74.86	58.49
16	12.61	9.85	36	28.37	22.16	56	44.13	34.48	76	59.89	46.79	96	75.65	59.10
17	13.40	10.47	37	29.16	22.78	57	44.92	35.09	77	60.68	47.71	97	76.44	59.72
18	14.18	11.08	38	29.94	23.40	58	45.70	35.71	78	61.46	48.02	98	77.22	60.33
19	14.97	11.70	39	30.73	24.01	59	46.49	36.32	79	62.25	48.64	99	78.01	60.95
20	15.76	12.31	40	31.52	24.63	60	47.28	36.94	80	63.04	49.25	100	78.80	61.57
Dist.	Dep.	Lat.												

52 DEGREES

TRAVERSE TABLE

38½ DEGREES

Dist.	Lat.	Dep.												
1	0.79	0.62	21	16.49	13.00	41	32.20	25.38	61	47.90	37.76	81	63.61	50.15
2	1.57	1.24	22	17.28	13.62	42	32.98	26.00	62	48.69	38.38	82	64.40	50.77
3	2.36	1.86	23	18.06	14.24	43	33.77	26.62	63	49.47	39.00	83	65.18	51.38
4	3.14	2.48	24	18.85	14.86	44	34.55	27.24	64	50.26	39.62	84	65.97	52.00
5	3.93	3.10	25	19.63	15.48	45	35.34	27.86	65	51.05	40.24	85	66.75	52.62
6	4.71	3.71	26	20.42	16.10	46	36.12	28.48	66	51.83	40.86	86	67.54	53.24
7	5.50	4.33	27	21.20	16.72	47	36.91	29.10	67	52.62	41.48	87	68.32	53.86
8	6.28	4.95	28	21.99	17.33	48	37.70	29.72	68	53.40	42.10	88	69.11	54.48
9	7.07	5.57	29	22.77	17.95	49	38.48	30.34	69	54.19	42.72	89	69.89	55.10
10	7.85	6.19	30	23.56	18.57	50	39.27	30.95	70	54.97	43.34	90	70.68	55.72
11	8.64	6.81	31	24.34	19.19	51	40.05	31.57	71	55.76	43.96	91	71.46	56.34
12	9.42	7.43	32	25.13	19.81	52	40.84	32.19	72	56.54	44.57	92	72.25	56.96
13	10.21	8.05	33	25.92	20.43	53	41.62	32.81	73	57.33	45.19	93	73.03	57.58
14	10.99	8.67	34	26.70	21.05	54	42.41	33.43	74	58.11	45.81	94	73.82	58.19
15	11.78	9.29	35	27.49	21.67	55	43.19	34.05	75	58.90	46.43	95	74.61	58.81
16	12.57	9.91	36	28.27	22.29	56	43.98	34.67	76	59.68	47.05	96	75.39	59.43
17	13.35	10.52	37	29.06	22.91	57	44.76	35.29	77	60.47	47.67	97	76.18	60.05
18	14.14	11.14	38	29.84	23.53	58	45.55	35.91	78	61.25	48.29	98	76.96	60.67
19	14.92	11.76	39	30.63	24.14	59	46.33	36.53	79	62.04	48.91	99	77.75	61.29
20	15.71	12.38	40	31.41	24.76	60	47.12	37.15	80	62.83	49.53	100	78.53	61.91

51¾ DEGREES

Dist.	Lat.	Dep.												
1	0.78	0.62	21	16.43	13.07	41	32.09	25.52	61	47.74	37.97	81	63.39	50.42
2	1.57	1.24	22	17.22	13.70	42	32.87	26.15	62	48.52	38.60	82	64.17	51.05
3	2.35	1.87	23	18.00	14.32	43	33.65	26.77	63	49.30	39.22	83	64.96	51.67
4	3.13	2.49	24	18.78	14.94	44	34.43	27.39	64	50.09	39.84	84	65.74	52.29
5	3.91	3.11	25	19.57	15.56	45	35.22	28.01	65	50.87	40.46	85	66.52	52.91
6	4.70	3.74	26	20.35	16.19	46	36.00	28.64	66	51.65	41.09	86	67.30	53.54
7	5.48	4.36	27	21.13	16.81	47	36.78	29.26	67	52.43	41.71	87	68.09	54.16
8	6.26	4.98	28	21.91	17.43	48	37.57	29.88	68	53.22	42.33	88	68.87	54.78
9	7.04	5.60	29	22.69	18.05	49	38.35	30.50	69	54.00	42.95	89	69.65	55.40
10	7.83	6.23	30	23.48	18.68	50	39.13	31.13	70	54.78	43.58	90	70.43	56.03
11	8.61	6.85	31	24.26	19.30	51	39.91	31.75	71	55.57	44.20	91	71.22	56.65
12	9.39	7.47	32	25.04	19.92	52	40.70	32.37	72	56.35	44.82	92	72.00	57.27
13	10.17	8.09	33	25.83	20.54	53	41.48	32.99	73	57.13	45.44	93	72.78	57.89
14	10.96	8.72	34	26.61	21.17	54	42.26	33.62	74	57.91	46.07	94	73.57	58.52
15	11.74	9.34	35	27.39	21.79	55	43.04	34.24	75	58.70	46.69	95	74.35	59.14
16	12.52	9.96	36	28.17	22.41	56	43.83	34.86	76	59.48	47.31	96	75.13	59.76
17	13.30	10.58	37	28.96	23.03	57	44.61	35.48	77	60.26	47.93	97	75.91	60.38
18	14.09	11.21	38	29.74	23.66	58	45.39	36.11	78	61.04	48.56	98	76.70	61.01
19	14.87	11.83	39	30.52	24.28	59	46.17	36.73	79	61.83	49.18	99	77.48	61.63
20	15.65	12.45	40	31.30	24.90	60	46.96	37.35	80	62.61	49.80	100	78.26	62.25

51½ DEGREES

38½ DEGREES

Dist.	Lat.	Dep.												
1	0.78	0.63	21	16.38	13.14	41	31.98	25.66	61	47.57	38.18	81	63.17	50.70
2	1.56	1.25	22	17.16	13.77	42	32.76	26.29	62	48.35	38.81	82	63.95	51.33
3	2.34	1.88	23	17.94	14.40	43	33.53	26.91	63	49.13	39.43	83	64.73	51.95
4	3.12	2.50	24	18.72	15.02	44	34.31	27.54	64	49.91	40.06	84	65.51	52.58
5	3.90	3.13	25	19.50	15.65	45	35.09	28.17	65	50.69	40.68	85	66.29	53.20
6	4.68	3.76	26	20.28	16.27	46	35.87	28.79	66	51.47	41.31	86	67.07	53.83
7	5.46	4.38	27	21.06	16.90	47	36.65	29.42	67	52.25	41.94	87	67.85	54.46
8	6.24	5.01	28	21.84	17.53	48	37.43	30.04	68	53.03	42.56	88	68.63	55.08
9	7.02	5.63	29	22.62	18.15	49	38.21	30.67	69	53.81	43.19	89	69.41	55.71
10	7.80	6.26	30	23.40	18.78	50	38.99	31.30	70	54.59	43.81	90	70.19	56.33
11	8.58	6.89	31	24.18	19.40	51	39.77	31.92	71	55.37	44.44	91	70.97	56.96
12	9.36	7.51	32	24.96	20.03	52	40.55	32.55	72	56.15	45.07	92	71.75	57.58
13	10.14	8.14	33	25.74	20.66	53	41.33	33.17	73	56.93	45.69	93	72.53	58.21
14	10.92	8.76	34	26.52	21.28	54	42.11	33.80	74	57.71	46.32	94	73.31	58.84
15	11.70	9.39	35	27.30	21.91	55	42.89	34.43	75	58.49	46.94	95	74.09	59.46
16	12.48	10.01	36	28.08	22.53	56	43.67	35.05	76	59.27	47.57	96	74.87	60.09
17	13.26	10.64	37	28.86	23.16	57	44.45	35.68	77	60.05	48.20	97	75.65	60.71
18	14.04	11.27	38	29.64	23.79	58	45.23	36.20	78	60.83	48.82	98	76.43	61.34
19	14.82	11.89	39	30.42	24.41	59	46.01	36.93	79	61.61	49.45	99	77.21	61.97
20	15.60	12.52	40	31.20	25.04	60	46.79	37.56	80	62.39	50.07	100	77.99	62.59
Dist.	Dep.	Lat.												

51½ DEGREES

Dist.	Lat.	Dep.												
1	0.78	0.63	21	16.32	13.22	41	31.86	25.80	61	47.41	38.39	81	62.95	50.97
2	1.55	1.26	22	17.10	13.84	42	32.64	26.43	62	48.18	39.02	82	63.73	51.60
3	2.33	1.89	23	17.87	14.47	43	33.42	27.06	63	48.96	39.65	83	64.50	52.23
4	3.11	2.52	24	18.65	15.10	44	34.19	27.69	64	49.74	40.28	84	65.28	52.86
5	3.89	3.15	25	19.43	15.73	45	34.97	28.32	65	50.51	40.91	85	66.06	53.49
6	4.66	3.78	26	20.21	16.36	46	35.75	28.95	66	51.29	41.54	86	66.83	54.12
7	5.44	4.41	27	20.98	16.99	47	36.53	29.58	67	52.07	42.16	87	67.61	54.75
8	6.22	5.04	28	21.76	17.62	48	37.30	30.21	68	52.85	42.79	88	68.39	55.38
9	6.99	5.66	29	22.54	18.25	49	38.08	30.84	69	53.62	43.42	89	69.17	56.01
10	7.77	6.29	30	23.31	18.88	50	38.86	31.47	70	54.40	44.05	90	69.94	56.64
11	8.55	6.92	31	24.09	19.51	51	39.63	32.10	71	55.18	44.68	91	70.72	57.27
12	9.33	7.55	32	24.87	20.14	52	40.41	32.72	72	55.95	45.31	92	71.50	57.90
13	10.11	8.18	33	25.65	20.77	53	41.19	33.35	73	56.73	45.94	93	72.27	58.53
14	10.88	8.81	34	26.42	21.40	54	41.97	33.98	74	57.51	46.57	94	73.05	59.16
15	11.66	9.44	35	27.20	22.03	55	42.74	34.61	75	58.29	47.20	95	73.83	59.79
16	12.43	10.07	36	27.98	22.66	56	43.52	35.24	76	59.06	47.83	96	74.61	60.41
17	13.21	10.70	37	28.75	23.28	57	44.30	35.87	77	59.84	48.46	97	75.38	61.04
18	13.99	11.33	38	29.53	23.91	58	45.07	36.50	78	60.62	49.09	98	76.16	61.67
19	14.77	11.96	39	30.31	24.54	59	45.85	37.13	79	61.39	49.72	99	76.94	62.30
20	15.54	12.59	40	31.09	25.17	60	46.63	37.76	80	62.17	50.35	100	77.71	62.93
Dist.	Dep.	Lat.												

51 DEGREES

TRAVERSE TABLE

39½ DEGREES

Dist.	Lat.	Dep.												
1	0.77	0.63	21	16.26	13.29	41	31.75	25.94	61	47.24	38.60	81	62.73	51.25
2	1.55	1.27	22	17.04	13.92	42	32.52	26.57	62	48.01	39.23	82	63.50	51.88
3	2.32	1.90	23	17.81	14.55	43	33.30	27.21	63	48.79	39.86	83	64.27	52.51
4	3.10	2.53	24	18.59	15.18	44	34.07	27.84	64	49.56	40.49	84	65.05	53.15
5	3.87	3.16	25	19.36	15.82	45	34.85	28.47	65	50.34	41.13	85	65.82	53.78
6	4.65	3.80	26	20.13	16.45	46	35.62	29.10	66	51.11	41.76	86	66.60	54.41
7	5.42	4.43	27	20.91	17.08	47	36.40	29.74	67	51.88	42.39	87	67.37	55.05
8	6.20	5.06	28	21.68	17.72	48	37.17	30.37	68	52.66	43.02	88	68.15	55.68
9	6.97	5.69	29	22.46	18.35	49	37.95	31.00	69	53.43	43.66	89	68.92	56.32
10	7.74	6.33	30	23.23	18.98	50	38.72	31.64	70	54.21	44.29	90	69.70	56.94
11	8.52	6.96	31	24.01	19.61	51	39.49	32.27	71	54.98	44.92	91	70.47	57.58
12	9.29	7.59	32	24.78	20.25	52	40.27	32.90	72	55.76	45.55	92	71.24	58.21
13	10.07	8.23	33	25.55	20.88	53	41.04	33.53	73	56.53	46.19	93	72.02	58.84
14	10.84	8.86	34	26.33	21.51	54	41.82	34.17	74	57.31	46.82	94	72.79	59.47
15	11.62	9.49	35	27.10	22.14	55	42.59	34.80	75	58.08	47.45	95	73.57	60.11
16	12.39	10.12	36	27.88	22.78	56	43.37	35.43	76	58.85	48.09	96	74.34	60.74
17	13.16	10.76	37	28.65	23.41	57	44.14	36.06	77	59.63	48.72	97	75.12	61.37
18	13.94	11.39	38	29.43	24.04	58	44.91	36.70	78	60.40	49.35	98	75.89	62.01
19	14.71	12.02	39	30.20	24.68	59	45.69	37.33	79	61.18	49.98	99	76.66	62.64
20	15.49	12.65	40	30.98	25.31	60	46.46	37.96	80	61.95	50.62	100	77.44	63.27

50¾ DEGREES

Dist.	Lat.	Dep.												
1	0.77	0.64	21	16.20	13.36	41	31.64	26.08	61	47.07	38.80	81	62.50	51.52
2	1.54	1.27	22	16.98	13.99	42	32.41	26.72	62	47.84	39.44	82	63.27	52.16
3	2.31	1.91	23	17.75	14.63	43	33.18	27.35	63	48.61	40.07	83	64.04	52.79
4	3.09	2.54	24	18.52	15.27	44	33.95	27.99	64	49.38	40.71	84	64.82	53.43
5	3.86	3.18	25	19.29	15.90	45	34.72	28.62	65	50.16	31.35	85	65.59	54.07
6	4.63	3.82	26	20.06	16.54	46	35.49	29.26	66	50.93	31.98	86	66.36	54.70
7	5.40	4.45	27	20.83	17.17	47	36.27	29.90	67	51.70	32.62	87	67.13	55.34
8	6.17	5.09	28	21.61	17.81	48	37.04	30.53	68	52.47	33.25	88	67.90	55.97
9	6.94	5.72	29	22.38	18.45	49	37.81	31.17	69	53.24	33.89	89	68.67	56.61
10	7.72	6.36	30	23.15	19.08	50	38.58	31.80	70	54.01	34.53	90	69.45	57.25
11	8.49	7.00	31	23.92	19.72	51	39.35	32.44	71	54.79	35.16	91	70.22	57.88
12	9.26	7.63	32	24.69	20.35	52	40.12	33.08	72	55.56	35.80	92	70.99	58.52
13	10.03	8.27	33	25.46	20.99	53	40.90	33.71	73	56.33	36.43	93	71.76	59.16
14	10.80	8.91	34	26.24	21.63	54	41.67	34.35	74	57.10	37.07	94	72.53	59.79
15	11.57	9.54	35	27.01	22.26	55	42.44	34.98	75	57.87	37.71	95	73.30	60.43
16	12.35	10.18	36	27.78	22.90	56	43.21	35.62	76	58.64	38.34	96	74.08	61.06
17	13.12	10.81	37	28.55	23.53	57	43.98	36.26	77	59.42	38.98	97	74.85	61.70
18	13.89	11.45	38	29.32	24.17	58	44.75	36.89	78	60.19	39.61	98	75.62	62.34
19	14.66	12.09	39	30.09	24.81	59	45.53	37.53	79	60.96	39.25	99	76.39	62.97
20	15.43	12.72	40	30.86	25.44	60	46.30	38.16	80	61.73	39.89	100	77.16	63.61

50½ DEGREES

TRAVERSE TABLE

109

39¾ DEGREES

Dist.	Lat.	Dep.												
1	0.77	0.64	21	16.15	13.43	41	31.52	26.22	61	46.90	39.01	81	62.28	51.79
2	1.54	1.28	22	16.91	14.07	42	32.29	26.86	62	47.67	39.65	82	63.04	52.43
3	2.31	1.92	23	17.68	14.71	43	33.06	27.50	63	48.44	40.28	83	63.81	53.07
4	3.08	2.56	24	18.45	15.35	44	33.83	28.14	64	49.21	40.92	84	64.58	53.71
5	3.84	3.20	25	19.22	15.99	45	34.60	28.77	65	49.97	41.56	85	65.35	54.35
6	4.61	3.84	26	19.99	16.63	46	35.37	29.41	66	50.74	42.20	86	66.12	54.99
7	5.38	4.48	27	20.76	17.26	47	36.14	30.05	67	51.51	42.84	87	66.89	55.63
8	6.15	5.12	28	21.53	17.90	48	36.90	30.69	68	52.28	43.48	88	67.66	56.27
9	6.92	5.75	29	22.30	18.54	49	37.67	31.33	69	53.05	44.12	89	68.43	56.91
10	7.69	6.39	30	23.07	19.18	50	38.44	31.97	70	53.82	44.76	90	69.20	57.55
11	8.46	7.03	31	23.83	19.82	51	39.21	32.61	71	54.59	45.40	91	69.96	58.19
12	9.23	7.67	32	24.60	20.46	52	39.98	33.25	72	55.36	46.04	92	70.73	58.83
13	9.99	8.31	33	25.37	21.10	53	40.75	33.89	73	56.13	46.68	93	71.50	59.47
14	10.76	8.95	34	26.14	21.74	54	41.52	34.53	74	56.89	47.32	94	72.27	60.11
15	11.53	9.59	35	26.91	22.38	55	42.29	35.17	75	57.66	47.96	95	73.04	60.75
16	12.30	10.23	36	27.68	23.02	56	43.06	35.81	76	58.43	48.60	96	73.81	61.39
17	13.07	10.87	37	28.45	23.66	57	43.82	36.45	77	59.20	49.24	97	74.58	62.03
18	13.84	11.51	38	29.22	24.30	58	44.59	37.09	78	59.97	49.88	98	75.35	62.66
19	14.61	12.15	39	29.98	24.94	59	45.36	37.73	79	60.74	50.52	99	76.12	63.30
20	15.38	12.79	40	30.75	25.58	60	46.13	38.37	80	61.51	51.16	100	76.88	63.94
Dist.	Dep.	Lat.												

50¼ DEGREES

Dist.	Lat.	Dep.												
1	0.77	0.64	21	16.09	13.50	41	31.41	26.35	61	46.73	39.21	81	62.05	52.07
2	1.53	1.29	22	16.85	14.14	42	32.17	27.00	62	47.49	39.85	82	62.82	52.71
3	2.30	1.93	23	17.62	14.78	43	32.94	27.64	63	48.26	40.50	83	63.58	53.35
4	3.06	2.57	24	18.39	15.43	44	33.71	28.28	64	49.03	41.14	84	64.35	53.99
5	3.83	3.21	25	19.15	16.07	45	34.47	28.93	65	49.79	41.78	85	65.11	54.64
6	4.60	3.86	26	19.92	16.71	46	35.24	29.57	66	50.56	42.42	86	65.88	55.28
7	5.36	4.50	27	20.68	17.36	47	36.00	30.21	67	51.32	43.07	87	66.65	55.92
8	6.13	5.14	28	21.45	18.00	48	36.77	30.85	68	52.09	43.71	88	67.41	56.57
9	6.89	5.79	29	22.22	18.64	49	37.54	31.50	69	52.86	44.35	89	68.18	57.21
10	7.66	6.43	30	22.98	19.28	50	38.30	32.14	70	53.62	45.00	90	68.94	57.85
11	8.43	7.07	31	23.75	19.93	51	39.07	32.78	71	54.39	45.64	91	69.71	58.49
12	9.19	7.71	32	24.51	20.57	52	39.83	33.42	72	55.16	46.28	92	70.48	59.14
13	9.96	8.36	33	25.28	21.21	53	40.60	34.07	73	55.92	46.92	93	71.24	59.78
14	10.72	9.00	34	26.05	21.85	54	41.37	34.71	74	56.69	47.57	94	72.01	60.42
15	11.49	9.64	35	26.81	22.50	55	42.13	35.35	75	57.45	48.21	95	72.77	61.06
16	12.26	10.28	36	27.58	23.14	56	42.90	36.00	76	58.22	48.85	96	73.54	61.71
17	13.02	10.93	37	28.34	23.78	57	43.66	36.64	77	58.99	49.49	97	74.31	62.35
18	13.79	11.57	38	29.11	24.43	58	44.43	37.28	78	59.75	50.14	98	75.07	62.99
19	14.55	12.21	39	29.88	25.07	59	45.20	37.92	79	60.52	50.78	99	75.84	63.64
20	15.32	12.86	40	30.64	25.71	60	45.96	38.57	80	61.28	51.42	100	76.60	64.28
Dist.	Dep.	Lat.												

50 DEGREES

TRAVERSE TABLE

40 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.												
Dist.	Dep.	Lat.												
1	0.76	0.65	21	16.03	13.57	41	31.29	26.49	61	46.56	39.41	81	61.82	52.34
2	1.53	1.29	22	16.79	14.21	42	32.06	27.14	62	47.32	40.06	82	62.59	52.98
3	2.29	1.94	23	17.55	14.86	43	32.82	27.78	63	48.08	40.71	83	63.35	53.63
4	3.05	2.58	24	18.32	15.51	44	33.58	28.43	64	48.85	41.35	84	64.11	54.27
5	3.82	3.23	25	19.08	16.15	45	34.35	29.08	65	49.61	42.00	85	64.87	54.92
6	4.58	3.88	26	19.84	16.80	46	35.14	29.72	66	50.37	42.64	86	65.64	55.57
7	5.34	4.52	27	20.61	17.45	47	35.87	30.37	67	51.14	43.29	87	66.40	56.21
8	6.11	5.17	28	21.37	18.09	48	36.64	31.01	68	51.90	43.94	88	67.16	56.86
9	6.87	5.82	29	22.13	18.74	49	37.40	31.66	69	52.66	44.58	89	67.93	57.50
10	7.63	6.46	30	22.90	19.38	50	38.16	32.31	70	53.43	45.23	90	68.69	58.15
11	8.40	7.11	31	23.66	20.03	51	38.92	32.95	71	54.19	45.87	91	69.45	58.80
12	9.16	7.75	32	24.42	20.68	52	39.69	33.60	72	54.95	46.52	92	70.22	59.44
13	9.92	8.40	33	25.19	21.32	53	40.45	34.24	73	55.72	47.17	93	70.98	60.09
14	10.69	9.05	34	25.95	21.97	54	41.21	34.89	74	56.48	47.81	94	71.74	60.74
15	11.45	9.69	35	26.71	22.61	55	41.98	35.54	75	57.24	48.46	95	72.51	61.38
16	12.21	10.34	36	27.48	23.26	56	42.74	36.18	76	58.01	49.11	96	73.27	62.03
17	12.97	10.98	37	28.24	23.91	57	43.50	36.83	77	58.77	49.75	97	74.03	62.67
18	13.74	11.63	38	29.00	24.55	58	44.27	37.48	78	59.53	50.40	98	74.80	63.32
19	14.50	12.28	39	29.77	25.20	59	45.03	38.12	79	60.30	51.04	99	75.56	63.97
20	15.26	12.92	40	30.53	25.84	60	45.79	38.77	80	61.06	51.69	100	76.32	64.61

49 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.												
Dist.	Dep.	Lat.												
1	0.76	0.65	21	15.97	13.64	41	31.18	26.63	61	46.38	39.62	81	61.59	52.61
2	1.52	1.30	22	16.73	14.29	42	31.94	27.28	62	47.15	40.27	82	62.35	53.25
3	2.28	1.95	23	17.49	14.94	43	32.70	27.93	63	47.91	40.92	83	63.11	53.90
4	3.04	2.60	24	18.25	15.59	44	33.46	28.58	64	48.67	41.56	84	63.87	54.55
5	3.80	3.25	25	19.01	16.24	45	34.22	29.23	65	49.43	42.21	85	64.63	55.20
6	4.56	3.90	26	19.77	16.89	46	34.98	29.87	66	50.19	42.86	86	65.39	55.85
7	5.32	4.55	27	20.53	17.54	47	35.74	30.52	67	50.95	43.51	87	66.16	56.50
8	6.08	5.20	28	21.29	18.18	48	36.50	31.17	68	51.71	44.16	88	66.92	57.15
9	6.84	5.84	29	22.05	18.83	49	37.26	31.82	69	52.47	44.81	89	67.68	57.80
10	7.60	6.49	30	22.81	19.48	50	38.02	32.47	70	53.23	45.46	90	68.44	58.45
11	8.36	7.14	31	23.57	20.13	51	38.78	33.12	71	53.99	46.11	91	69.20	59.10
12	9.12	7.79	32	24.33	20.78	52	39.54	33.77	72	54.75	46.76	92	69.96	59.75
13	9.89	8.44	33	25.09	21.43	53	40.30	34.42	73	55.51	47.41	93	70.72	60.40
14	10.65	9.09	34	25.85	22.08	54	41.06	35.07	74	56.27	48.06	94	71.48	61.05
15	11.41	9.74	35	26.61	22.73	55	41.82	35.72	75	57.03	48.71	95	72.24	61.70
16	12.17	10.39	36	27.37	23.38	56	42.58	36.37	76	57.79	49.36	96	73.00	62.35
17	12.93	11.04	37	28.13	24.03	57	43.34	37.02	77	58.55	50.01	97	73.76	63.00
18	13.69	11.69	38	28.90	24.68	58	44.10	37.67	78	59.31	50.66	98	74.52	63.65
19	14.45	12.34	39	29.66	25.33	59	44.86	38.32	79	60.07	51.31	99	75.28	64.30
20	15.21	12.99	40	30.42	25.98	60	45.62	38.97	80	60.83	51.96	100	76.04	64.94

49 $\frac{1}{2}$ DEGREES

40 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.												
1	0.76	0.65	21	15.91	13.71	41	31.06	26.76	61	46.21	39.82	81	61.36	52.87
2	1.52	1.31	22	16.67	14.36	42	31.82	27.42	62	46.97	40.47	82	62.12	53.53
3	2.27	1.96	23	17.42	15.01	43	32.58	28.07	63	47.73	41.12	83	62.88	54.18
4	3.03	2.61	24	18.18	15.67	44	33.33	28.72	64	48.48	41.78	84	63.64	54.83
5	3.79	3.26	25	18.94	16.32	45	34.09	29.37	65	49.24	42.43	85	64.39	55.48
6	4.55	3.92	26	19.70	16.97	46	34.85	30.03	66	50.00	43.08	86	65.15	56.14
7	5.30	4.57	27	20.45	17.62	47	35.61	30.68	67	50.76	43.73	87	65.91	56.79
8	6.06	5.22	28	21.21	18.28	48	36.36	31.33	68	51.51	44.39	88	66.67	57.44
9	6.82	5.87	29	21.97	18.93	49	37.12	31.99	69	52.27	45.04	89	67.42	58.10
10	7.58	6.53	30	22.73	19.58	50	37.88	32.64	70	53.03	45.69	90	68.18	58.75
11	8.33	7.18	31	23.48	20.24	51	38.64	33.29	71	53.79	46.35	91	68.94	59.40
12	9.09	7.83	32	24.24	20.89	52	39.39	33.94	72	54.54	47.00	92	69.70	60.05
13	9.85	8.49	33	25.00	21.54	53	40.15	34.60	73	55.30	47.65	93	70.45	60.71
14	10.61	9.14	34	25.76	22.19	54	40.91	35.25	74	56.06	48.30	94	71.21	61.36
15	11.36	9.79	35	26.51	22.85	55	41.67	35.90	75	56.82	48.96	95	71.97	62.01
16	12.12	10.44	36	27.27	23.50	56	42.42	36.55	76	57.57	49.61	96	72.73	62.66
17	12.88	11.10	37	28.03	24.15	57	43.18	37.21	77	58.33	50.26	97	73.48	63.32
18	13.64	11.75	38	28.79	24.80	58	43.94	37.86	78	59.09	50.92	98	74.24	63.97
19	14.39	12.40	39	29.54	25.46	59	44.70	38.51	79	59.85	51.57	99	75.00	64.62
20	15.15	13.06	40	30.30	26.11	60	45.45	39.17	80	60.61	52.22	100	75.76	65.28

Dist.	Dep.	Lat.												
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49 $\frac{1}{4}$ DEGREES

Dist.	Lat.	Dep.												
1	0.75	0.66	21	15.85	13.78	41	30.94	26.90	61	46.04	40.02	81	61.13	53.14
2	1.51	1.31	22	16.60	14.43	42	31.70	27.55	62	46.79	40.68	82	61.89	53.80
3	2.26	1.97	23	17.36	15.09	43	32.45	28.21	63	47.55	41.33	83	62.64	54.45
4	3.02	2.62	24	18.11	15.75	44	33.21	28.87	64	48.30	41.99	84	63.40	55.11
5	3.77	3.28	25	18.87	16.40	45	33.96	29.52	65	49.06	42.64	85	64.15	55.76
6	4.53	3.94	26	19.62	17.06	46	34.72	30.18	66	49.81	43.30	86	64.90	56.42
7	5.28	4.59	27	20.38	17.71	47	35.47	30.83	67	50.57	43.96	87	65.66	57.08
8	6.04	5.25	28	21.13	18.37	48	36.23	31.49	68	51.32	44.61	88	66.41	57.73
9	6.79	5.90	29	21.89	19.03	49	36.98	32.15	69	52.07	45.27	89	67.17	58.39
10	7.55	6.56	30	22.64	19.68	50	37.74	32.80	70	52.83	45.92	90	67.92	59.05
11	8.30	7.22	31	23.40	20.34	51	38.49	33.46	71	53.58	46.58	91	68.68	59.70
12	9.06	7.87	32	24.15	20.99	52	39.24	34.12	72	54.34	47.24	92	69.43	60.36
13	9.81	8.53	33	24.91	21.65	53	40.00	34.77	73	55.09	47.89	93	70.19	61.01
14	10.57	9.18	34	25.66	22.31	54	40.75	35.43	74	55.85	48.55	94	70.94	61.67
15	11.32	9.84	35	26.41	22.96	55	41.51	36.08	75	56.60	49.20	95	71.70	62.33
16	12.08	10.50	36	27.17	23.62	56	42.26	36.74	76	57.36	49.86	96	72.45	62.98
17	12.83	11.15	37	27.92	24.27	57	43.02	37.40	77	58.11	50.52	97	73.21	63.64
18	13.58	11.81	38	28.68	24.93	58	43.77	38.05	78	58.87	51.17	98	73.96	64.29
19	14.34	12.47	39	29.43	25.59	59	44.53	38.71	79	59.62	51.83	99	74.72	64.95
20	15.09	13.12	40	30.19	26.24	60	45.28	39.36	80	60.38	52.48	100	75.47	65.61

Dist.	Dep.	Lat.												
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49 DEGREES

TRAVERSE TABLE

41¼ DEGREES

Dist.	Lat.	Dep.												
1	0.75	0.66	21	15.79	13.85	41	30.83	27.03	61	45.86	40.22	81	60.90	53.41
2	1.50	1.32	22	16.54	14.51	42	31.58	27.69	62	46.61	40.88	82	61.65	54.07
3	2.25	1.98	23	17.29	15.16	43	32.33	28.35	63	47.37	41.54	83	62.40	54.73
4	3.00	2.64	24	18.04	15.82	44	33.08	29.01	64	48.12	42.20	84	63.15	55.38
5	3.75	3.30	25	18.80	16.48	45	33.83	29.67	65	48.87	42.86	85	63.91	56.04
6	4.50	3.96	26	19.55	17.14	46	34.58	30.33	66	49.62	43.52	86	64.66	56.70
7	5.25	4.62	27	20.30	17.80	47	35.34	30.99	67	50.37	44.18	87	65.41	57.36
8	6.00	5.27	28	21.05	18.46	48	36.09	31.65	68	51.13	44.84	88	66.16	58.02
9	6.75	5.93	29	21.80	19.12	49	36.84	32.31	69	51.88	45.49	89	66.91	58.68
10	7.50	6.59	30	22.56	19.78	50	37.59	32.97	70	52.63	46.15	90	67.67	59.34
11	8.25	7.25	31	23.31	20.44	51	38.34	33.63	71	53.38	46.81	91	68.42	60.00
12	9.00	7.91	32	24.06	21.10	52	39.10	34.29	72	54.13	47.47	92	69.17	60.66
13	9.75	8.57	33	24.81	21.76	53	39.85	34.95	73	54.88	48.13	93	69.92	61.32
14	10.50	9.23	34	25.56	22.42	54	40.60	35.60	74	55.64	48.79	94	70.67	61.98
15	11.25	9.89	35	26.31	23.08	55	41.35	36.26	75	56.39	49.45	95	71.43	62.64
16	12.00	10.55	36	27.07	23.74	56	42.10	36.92	76	57.14	50.11	96	72.18	63.30
17	12.75	11.21	37	27.82	24.40	57	42.85	37.58	77	57.89	50.77	97	72.93	63.96
18	13.50	11.87	38	28.57	25.06	58	43.61	38.24	78	58.64	51.43	98	73.68	64.62
19	14.25	12.53	39	29.32	25.71	59	44.36	38.90	79	59.40	52.09	99	74.43	65.28
20	15.00	13.19	40	30.07	26.37	60	45.11	39.56	80	60.15	52.75	100	75.18	65.93

48¾ DEGREES

Dist.	Lat.	Dep.												
1	0.75	0.66	21	15.73	13.91	41	30.71	27.17	61	45.69	40.42	81	60.67	53.67
2	1.50	1.33	22	16.48	14.58	42	31.46	27.83	62	46.44	41.08	82	61.41	54.33
3	2.25	1.99	23	17.23	15.24	43	32.21	28.49	63	47.18	41.75	83	62.16	55.00
4	3.00	2.65	24	17.97	15.90	44	32.95	29.16	64	47.93	42.41	84	62.91	55.66
5	3.75	3.31	25	18.72	16.57	45	33.70	29.82	65	48.68	43.07	85	63.66	56.32
6	4.50	3.98	26	19.47	17.23	46	34.45	30.48	66	49.43	43.73	86	64.41	56.99
7	5.25	4.64	27	20.22	17.89	47	35.20	31.14	67	50.18	44.40	87	65.16	57.65
8	6.00	5.30	28	20.97	18.55	48	35.95	31.81	68	50.93	45.06	88	65.91	58.31
9	6.75	5.96	29	21.72	19.22	49	36.70	32.47	69	51.68	45.72	89	66.66	58.97
10	7.50	6.63	30	22.47	19.88	50	37.45	33.13	70	52.43	46.38	90	67.41	59.64
11	8.25	7.29	31	23.22	20.54	51	38.20	33.79	71	53.18	47.05	91	68.15	60.30
12	9.00	7.95	32	23.97	21.20	52	38.95	34.46	72	53.92	47.71	92	68.90	60.96
13	9.75	8.61	33	24.72	21.87	53	39.69	35.12	73	54.67	48.37	93	69.65	61.62
14	10.50	9.28	34	25.46	22.53	54	40.44	35.78	74	55.42	49.03	94	70.40	62.29
15	11.25	9.94	35	26.21	23.19	55	41.19	36.44	75	56.17	49.70	95	71.15	62.95
16	12.00	10.60	36	26.96	23.85	56	41.94	37.11	76	56.92	50.36	96	71.90	63.61
17	12.75	11.26	37	27.71	24.52	57	42.69	37.77	77	57.67	51.02	97	72.65	64.27
18	13.50	11.93	38	28.46	25.18	58	43.44	38.43	78	58.42	51.68	98	73.40	64.94
19	14.25	12.59	39	29.21	25.84	59	44.19	39.09	79	59.17	52.35	99	74.15	65.60
20	15.00	13.25	40	29.96	26.50	60	44.94	39.76	80	59.92	53.01	100	74.90	66.26

48½ DEGREES

TRAVERSE TABLE

113

41 3/4 DEGREES

Dist.	Lat.	Dep.												
1	0.75	0.67	21	15.67	13.98	41	30.59	27.30	61	45.51	40.62	81	60.43	53.94
2	1.49	1.33	22	16.41	14.65	42	31.33	27.97	62	46.26	41.28	82	61.18	54.60
3	2.24	2.00	23	17.16	15.32	43	32.08	28.63	63	47.00	41.95	83	61.92	55.27
4	2.98	2.66	24	17.91	15.98	44	32.83	29.30	64	47.75	42.62	84	62.67	55.93
5	3.73	3.33	25	18.65	16.65	45	33.57	29.97	65	48.49	43.28	85	63.41	56.60
6	4.48	4.00	26	19.40	17.31	46	34.32	30.63	66	49.24	43.95	86	64.16	57.27
7	5.22	4.66	27	20.14	17.98	47	35.06	31.30	67	49.99	44.61	87	64.91	57.93
8	5.97	5.33	28	20.89	18.64	48	35.81	31.96	68	50.73	45.28	88	65.65	58.60
9	6.71	5.99	29	21.64	19.31	49	36.56	32.63	69	51.48	45.95	89	66.40	59.26
10	7.46	6.66	30	22.38	19.98	50	37.30	33.29	70	52.22	46.61	90	67.15	59.93
11	8.21	7.32	31	23.13	20.64	51	38.05	33.96	71	52.97	47.28	91	67.89	60.60
12	8.95	7.99	32	23.87	21.31	52	38.79	34.63	72	53.72	47.94	92	68.64	61.26
13	9.70	8.66	33	24.62	21.97	53	39.54	35.29	73	54.46	48.61	93	69.38	61.93
14	10.44	9.32	34	25.37	22.64	54	40.29	35.96	74	55.21	49.28	94	70.13	62.59
15	11.19	9.99	35	26.11	23.31	55	41.03	36.62	75	55.95	49.94	95	70.88	63.26
16	11.94	10.65	36	26.86	23.97	56	41.78	37.29	76	56.70	50.61	96	71.62	63.92
17	12.68	11.32	37	27.60	24.64	57	42.53	37.96	77	57.45	51.27	97	72.37	64.59
18	13.43	11.99	38	28.35	25.30	58	43.27	38.62	78	58.19	51.94	98	73.11	65.26
19	14.18	12.65	39	29.10	25.97	59	44.02	39.29	79	58.94	52.60	99	73.86	65.92
20	14.92	13.32	40	29.84	26.64	60	44.76	39.95	80	59.68	53.27	100	74.61	66.59
Dist.	Dep.	Lat.												

48 1/4 DEGREES

Dist.	Lat.	Dep.												
1	0.74	0.67	21	15.61	14.05	41	30.47	27.43	61	45.33	40.82	81	60.19	54.20
2	1.49	1.34	22	16.35	14.72	42	31.21	28.10	62	46.07	41.49	82	60.94	54.87
3	2.23	2.01	23	17.09	15.39	43	31.96	28.77	63	46.82	42.16	83	61.68	55.54
4	2.97	2.68	24	17.84	16.06	44	32.70	29.44	64	47.56	42.82	84	62.42	56.21
5	3.72	3.35	25	18.58	16.73	45	33.44	30.11	65	48.30	43.49	85	63.17	56.88
6	4.46	4.01	26	19.32	17.40	46	34.18	30.78	66	49.05	44.16	86	63.91	57.55
7	5.20	4.68	27	20.06	18.07	47	34.93	31.45	67	49.79	44.83	87	64.65	58.21
8	5.95	5.35	28	20.81	18.74	48	35.67	32.12	68	50.53	45.50	88	65.40	58.88
9	6.69	6.02	29	21.55	19.40	49	36.41	32.79	69	51.28	46.17	89	66.14	59.55
10	7.43	6.69	30	22.29	20.07	50	37.16	33.46	70	52.02	46.84	90	66.88	60.22
11	8.17	7.32	31	23.04	20.74	51	37.90	34.13	71	52.76	47.51	91	67.63	60.89
12	8.92	8.03	32	23.78	21.41	52	38.64	34.79	72	53.51	48.18	92	68.37	61.56
13	9.66	8.70	33	24.52	22.08	53	39.39	35.46	73	54.25	48.85	93	69.11	62.23
14	10.40	9.37	34	25.27	22.75	54	40.13	36.13	74	54.99	49.52	94	69.86	62.90
15	11.15	10.04	35	26.01	23.42	55	40.87	36.80	75	55.74	50.18	95	70.60	63.57
16	11.89	10.71	36	26.75	24.09	56	41.62	37.47	76	56.48	50.85	96	71.34	64.24
17	12.63	11.38	37	27.50	24.76	57	42.36	38.14	77	57.22	51.52	97	72.08	64.91
18	13.38	12.04	38	28.24	25.43	58	43.10	38.81	78	57.97	52.19	98	72.83	65.57
19	14.12	12.71	39	28.98	26.10	59	43.85	39.48	79	58.71	52.86	99	73.57	66.24
20	14.86	13.38	40	29.73	26.77	60	44.59	40.15	80	59.45	53.53	100	74.31	66.91
Dist.	Dep.	Lat.												

48 DEGREES

TRAVERSE TABLE

42½ DEGREES

Dist.	Lat.	Dep.												
Dist.	Dep.	Lat.												
1	0.74	0.67	21	15.54	14.12	41	30.35	27.57	61	45.15	41.01	81	59.96	54.46
2	1.48	1.34	22	16.28	14.79	42	31.09	28.24	62	45.89	41.69	82	60.70	55.13
3	2.22	2.02	23	17.02	15.46	43	31.83	28.91	63	46.63	42.36	83	61.44	55.81
4	2.96	2.69	24	17.77	16.14	44	32.57	29.58	64	47.37	43.03	84	62.18	56.48
5	3.70	3.36	25	18.51	16.81	45	33.31	30.26	65	48.11	43.70	85	62.92	57.15
6	4.44	4.03	26	19.25	17.48	46	34.05	30.93	66	48.85	44.38	86	63.66	57.82
7	5.18	4.71	27	19.99	18.15	47	34.79	31.60	67	49.59	45.05	87	64.40	58.50
8	5.92	5.38	28	20.73	18.83	48	35.53	32.27	68	50.33	45.72	88	65.14	59.17
9	6.66	6.05	29	21.47	19.50	49	36.27	32.95	69	51.07	46.39	89	65.88	59.84
10	7.40	6.72	30	22.21	20.17	50	37.01	33.62	70	51.82	47.07	90	66.62	60.51
11	8.14	7.40	31	22.95	20.84	51	37.75	34.29	71	52.56	47.74	91	67.36	61.19
12	8.88	8.07	32	23.69	21.52	52	38.49	34.96	72	53.30	48.41	92	68.10	61.86
13	9.62	8.74	33	24.43	22.19	53	39.23	35.64	73	54.04	49.08	93	68.84	62.53
14	10.36	9.41	34	25.17	22.86	54	39.97	36.31	74	54.78	49.76	94	69.58	63.20
15	11.10	10.09	35	25.91	23.53	55	40.71	36.98	75	55.52	50.43	95	70.32	63.87
16	11.84	10.76	36	26.65	24.21	56	41.45	37.65	76	56.26	51.10	96	71.06	64.55
17	12.58	11.43	37	27.39	24.88	57	42.19	38.32	77	57.00	51.77	97	71.80	65.22
18	13.32	12.10	38	28.13	25.55	58	42.93	39.00	78	57.74	52.44	98	72.54	65.89
19	14.06	12.77	39	28.87	26.22	59	43.67	39.67	79	58.48	53.12	99	73.28	66.56
20	14.80	13.45	40	29.61	26.89	60	44.41	40.34	80	59.22	53.79	100	74.02	67.24
Dist.	Dep.	Lat.												

47½ DEGREES

Dist.	Lat.	Dep.												
Dist.	Dep.	Lat.												
1	0.74	0.68	21	15.48	14.19	41	30.23	27.70	61	44.97	41.21	81	59.72	54.72
2	1.47	1.35	22	16.22	14.86	42	30.97	28.37	62	45.71	41.89	82	60.46	55.40
3	2.21	2.03	23	16.96	15.54	43	31.70	29.05	63	46.45	42.56	83	61.19	56.07
4	2.95	2.70	24	17.69	16.21	44	32.44	29.73	64	47.19	43.24	84	61.93	56.75
5	3.69	3.38	25	18.43	16.89	45	33.18	30.40	65	47.92	43.91	85	62.67	57.43
6	4.42	4.05	26	19.17	17.57	46	33.91	31.08	66	48.66	44.59	86	63.41	58.10
7	5.16	4.73	27	19.91	18.24	47	34.65	31.75	67	49.40	45.26	87	64.14	58.78
8	5.90	5.40	28	20.64	18.92	48	35.39	32.43	68	50.13	45.94	88	64.88	59.45
9	6.64	6.08	29	21.38	19.59	49	36.13	33.10	69	50.87	46.62	89	65.62	60.13
10	7.37	6.76	30	22.12	20.27	50	36.86	33.78	70	51.61	47.29	90	66.35	60.80
11	8.11	7.43	31	22.86	20.94	51	37.60	34.46	71	52.35	47.97	91	67.09	61.48
12	8.85	8.11	32	23.59	21.62	52	38.34	35.13	72	53.08	48.64	92	67.83	62.15
13	9.58	8.78	33	24.33	22.29	53	39.08	35.81	73	53.82	49.32	93	68.57	62.83
14	10.32	9.46	34	25.07	22.97	54	39.81	36.48	74	54.56	49.99	94	69.30	63.51
15	11.06	10.13	35	25.80	23.65	55	40.55	37.16	75	55.30	50.67	95	70.04	64.18
16	11.80	10.81	36	26.54	24.32	56	41.29	37.83	76	56.03	51.34	96	70.78	64.86
17	12.53	11.48	37	27.28	25.00	57	42.02	38.51	77	56.77	52.02	97	71.52	65.53
18	13.27	12.16	38	28.02	25.67	58	42.76	39.18	78	57.51	52.70	98	72.25	66.21
19	14.01	12.84	39	28.75	26.35	59	43.50	39.86	79	58.24	53.37	99	72.99	66.88
20	14.75	13.51	40	29.49	27.02	60	44.24	40.54	80	58.98	54.05	100	73.73	67.56
Dist.	Dep.	Lat.												

47½ DEGREES

423/4 DEGREES

Dist.	Lat.	Dep.												
1	0.73	0.68	21	15.42	14.25	41	30.11	27.83	61	44.79	41.41	81	59.48	54.98
2	1.47	1.36	22	16.16	14.93	42	30.84	28.51	62	45.53	42.09	82	60.21	55.66
3	2.20	2.04	23	16.89	15.61	43	31.58	29.19	63	46.26	42.76	83	60.95	56.34
4	2.94	2.72	24	17.62	16.29	44	32.31	29.87	64	47.00	43.44	84	61.68	57.02
5	3.67	3.39	25	18.36	16.97	45	33.04	30.55	65	47.73	44.12	85	62.42	57.70
6	4.41	4.07	26	19.09	17.65	46	33.78	31.22	66	48.47	44.80	86	63.15	58.38
7	5.14	4.75	27	19.83	18.33	47	34.51	31.90	67	49.20	45.48	87	63.89	59.06
8	5.87	5.43	28	20.56	19.01	48	35.25	32.58	68	49.93	46.16	88	64.62	59.73
9	6.61	6.11	29	21.30	19.69	49	35.98	33.26	69	50.67	46.84	89	65.35	60.41
10	7.34	6.79	30	22.03	20.36	50	36.72	33.94	70	51.40	47.52	90	66.09	61.09
11	8.08	7.47	31	22.76	21.04	51	37.45	34.62	71	52.14	48.19	91	66.82	61.77
12	8.81	8.15	32	23.50	21.72	52	38.18	35.30	72	52.87	48.87	92	67.56	62.45
13	9.55	8.82	33	24.23	22.40	53	38.92	35.98	73	53.61	49.55	93	68.29	63.13
14	10.28	9.50	34	24.97	23.08	54	39.65	36.66	74	54.34	50.23	94	69.03	63.81
15	11.01	10.18	35	25.70	23.76	55	40.39	37.33	75	55.07	50.91	95	69.76	64.49
16	11.75	10.86	36	26.44	24.44	56	41.12	38.01	76	55.81	51.59	96	70.49	65.16
17	12.48	11.54	37	27.17	25.12	57	41.86	38.69	77	56.54	52.27	97	71.23	65.84
18	13.22	12.22	38	27.90	25.79	58	42.59	39.37	78	57.28	52.95	98	71.96	66.52
19	13.95	12.90	39	28.64	26.47	59	43.32	40.05	79	58.01	53.63	99	72.70	67.20
20	14.69	13.58	40	29.37	27.15	60	44.06	40.73	80	58.75	54.30	100	73.43	67.88

47 1/4 DEGREES

Dist.	Lat.	Dep.												
1	0.73	0.68	21	15.36	14.32	41	29.99	27.96	61	44.61	41.60	81	59.24	55.24
2	1.46	1.36	22	16.09	15.00	42	30.72	28.64	62	45.34	42.28	82	59.97	55.92
3	2.19	2.05	23	16.82	15.68	43	31.45	29.33	63	46.08	42.97	83	60.70	56.61
4	2.93	2.73	24	17.55	16.37	44	32.18	30.01	64	46.81	43.65	84	61.43	57.29
5	3.66	3.41	25	18.28	17.05	45	32.91	30.69	65	47.54	44.33	85	62.17	57.97
6	4.39	4.09	26	19.02	17.73	46	33.64	31.37	66	48.27	45.01	86	62.90	58.65
7	5.12	4.77	27	19.75	18.41	47	34.37	32.05	67	49.00	45.60	87	63.63	59.33
8	5.85	5.46	28	20.48	19.10	48	35.10	32.74	68	49.73	46.38	88	64.36	60.02
9	6.58	6.14	29	21.21	19.78	49	35.84	33.42	69	50.56	47.06	89	65.09	60.70
10	7.31	6.82	30	21.94	20.46	50	36.57	34.10	70	51.19	47.74	90	65.82	61.38
11	8.04	7.50	31	22.67	21.14	51	37.30	34.78	71	51.93	48.42	91	63.55	62.06
12	8.78	8.18	32	23.40	21.82	52	38.03	35.46	72	52.66	49.10	92	67.28	62.74
13	9.51	8.87	33	24.13	22.51	53	38.76	36.15	73	53.39	49.79	93	68.02	63.43
14	10.24	9.55	34	24.87	23.19	54	39.49	36.83	74	54.12	50.47	94	68.75	64.11
15	10.97	10.23	35	25.60	23.87	55	40.22	37.51	75	54.85	51.15	95	69.48	64.79
16	11.70	10.91	36	26.33	24.55	56	40.96	38.19	76	55.58	51.83	96	70.21	65.47
17	12.43	11.59	37	27.06	25.23	57	41.69	38.87	77	56.31	52.51	97	70.94	66.15
18	13.16	12.28	38	27.79	25.92	58	42.42	39.56	78	57.05	53.20	98	71.67	66.84
19	13.89	12.96	39	28.52	26.60	59	43.15	40.24	79	57.78	53.88	99	72.40	67.52
20	14.63	13.64	40	29.25	27.28	60	42.88	40.92	80	58.51	54.56	100	73.14	68.20

47 DEGREES

TRAVERSE TABLE

43½ DEGREES

Dist.	Lat.	Dep.												
1	0.73	0.69	21	15.30	14.39	41	29.86	28.09	61	44.43	41.80	81	59.00	55.50
2	1.46	1.37	22	16.02	15.07	42	30.59	28.78	62	45.16	42.48	82	59.73	56.18
3	2.19	2.06	23	16.75	15.76	43	31.32	29.46	63	45.89	43.17	83	60.45	56.87
4	2.91	2.74	24	17.48	16.44	44	32.05	30.15	64	46.62	43.85	84	61.18	57.56
5	3.64	3.43	25	18.21	17.13	45	32.78	30.83	65	47.34	44.54	85	61.91	58.24
6	4.37	4.11	26	18.94	17.81	46	33.51	31.52	66	48.07	45.22	86	62.64	58.93
7	5.10	4.80	27	19.67	18.50	47	34.23	32.20	67	48.80	45.91	87	63.37	59.61
8	5.83	5.48	28	20.39	19.19	48	34.96	32.89	68	49.53	46.59	88	64.10	60.30
9	6.56	6.17	29	21.12	19.87	49	35.69	33.57	69	50.26	47.28	89	64.82	60.98
10	7.28	6.85	30	21.85	20.56	50	36.42	34.26	70	50.99	47.96	90	65.55	61.67
11	8.01	7.54	31	22.58	21.24	51	37.15	34.94	71	51.71	48.65	91	66.28	62.35
12	8.74	8.22	32	23.31	21.93	52	37.88	35.63	72	52.44	49.33	92	67.01	63.04
13	9.47	8.91	33	24.04	22.61	53	38.60	36.31	73	53.17	50.02	93	67.74	63.72
14	10.20	9.59	34	24.76	23.30	54	39.33	37.00	74	53.90	50.70	94	68.47	64.41
15	10.93	10.28	35	25.49	23.98	55	40.06	37.69	75	54.63	51.39	95	69.20	65.09
16	11.65	10.96	36	26.22	24.67	56	40.79	38.37	76	55.36	52.07	96	69.92	65.78
17	12.38	11.65	37	26.95	25.35	57	41.52	39.06	77	56.08	52.76	97	70.65	66.46
18	13.11	12.33	38	27.68	26.04	58	42.25	39.74	78	56.81	53.44	98	71.37	67.15
19	13.84	13.02	39	28.41	26.72	59	42.97	40.43	79	57.54	54.13	99	72.11	67.83
20	14.57	13.70	40	29.13	27.41	60	43.70	41.11	80	58.27	54.81	100	72.84	68.52

Dist.	Dep.	Lat.												
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46½ DEGREES

Dist.	Lat.	Dep.												
1	0.73	0.69	21	15.23	14.46	41	29.74	28.22	61	44.25	41.99	81	58.76	55.76
2	1.45	1.38	22	15.96	15.14	42	30.47	28.91	62	44.97	42.68	82	59.48	56.45
3	2.18	2.07	23	16.68	15.83	43	31.19	29.60	63	45.70	43.37	83	60.21	57.13
4	2.90	2.75	24	17.41	16.52	44	31.92	30.29	64	46.42	44.05	84	60.93	57.82
5	3.63	3.44	25	18.13	17.21	45	32.64	30.98	65	47.15	44.74	85	61.66	58.51
6	4.35	4.13	26	18.86	17.90	46	33.37	31.66	66	47.87	45.43	86	62.38	59.20
7	5.08	4.82	27	19.59	18.59	47	34.09	32.35	67	48.60	46.12	87	63.11	59.89
8	5.80	5.51	28	20.31	19.27	48	34.82	33.04	68	49.33	46.81	88	63.83	60.58
9	6.53	6.20	29	21.04	19.96	49	35.54	33.73	69	50.05	47.50	89	64.56	61.26
10	7.25	6.88	30	21.76	20.65	50	36.27	34.42	70	50.78	48.18	90	65.28	61.95
11	7.98	7.57	31	22.49	21.34	51	36.99	35.11	71	51.50	48.87	91	66.01	62.64
12	8.70	8.26	32	23.21	22.03	52	37.72	35.79	72	52.23	49.56	92	66.73	63.33
13	9.43	8.95	33	23.94	22.72	53	38.44	36.48	73	52.95	50.25	93	67.46	64.02
14	10.16	9.64	34	24.66	23.40	54	39.17	37.17	74	53.68	50.94	94	68.19	64.71
15	10.88	10.33	35	25.39	24.09	55	39.90	37.86	75	54.40	51.63	95	68.91	65.39
16	11.61	11.01	36	26.11	24.78	56	40.62	38.55	76	55.13	52.31	96	69.64	66.08
17	12.33	11.70	37	26.84	25.47	57	41.35	39.24	77	55.85	53.00	97	70.36	66.77
18	13.06	12.39	38	27.56	26.16	58	42.07	39.92	78	56.58	53.69	98	71.09	67.46
19	13.78	13.08	39	28.29	26.85	59	42.80	40.61	79	57.30	54.38	99	71.81	68.15
20	14.51	13.77	40	29.01	27.53	60	43.52	41.30	80	58.03	55.07	100	72.54	68.84

Dist.	Dep.	Lat.												
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46½ DEGREES

TRAVERSE TABLE

117

43¾ DEGREES

Dist.	Lat.	Dep.												
1	0.72	0.69	21	15.17	14.52	41	29.62	28.35	61	44.06	42.18	81	58.51	56.01
2	1.44	1.38	22	15.89	15.21	42	30.34	29.04	62	44.79	42.87	82	59.23	56.70
3	2.16	2.07	23	16.51	15.90	43	31.06	29.74	63	45.51	43.57	83	59.96	57.40
4	2.89	2.77	24	17.34	16.60	44	31.78	30.43	64	46.23	44.26	84	60.68	58.09
5	3.61	3.46	25	18.06	17.29	45	32.51	31.12	65	46.95	44.95	85	61.40	58.78
6	4.33	4.15	26	18.78	17.98	46	33.23	31.81	66	47.68	45.64	86	62.12	59.47
7	5.06	4.84	27	19.50	18.67	47	33.95	32.50	67	48.40	46.33	87	62.85	60.16
8	5.78	5.53	28	20.23	19.36	48	34.67	33.19	68	49.12	47.02	88	63.57	60.85
9	6.50	6.22	29	20.95	20.05	49	35.40	33.88	69	49.84	47.71	89	64.29	61.54
10	7.22	6.92	30	21.67	20.75	50	36.12	34.58	70	50.57	48.41	90	65.01	62.24
11	7.95	7.61	31	22.39	21.44	51	36.84	35.27	71	51.29	49.10	91	65.74	62.93
12	8.67	8.30	32	23.12	22.14	52	37.56	35.96	72	52.01	49.79	92	66.46	63.62
13	9.39	8.99	33	23.84	22.82	53	38.29	36.65	73	52.73	50.48	93	67.18	64.31
14	10.11	9.68	34	24.56	23.51	54	39.01	37.34	74	53.45	51.17	94	67.90	65.00
15	10.84	10.37	35	25.28	24.20	55	39.73	38.03	75	54.18	51.86	95	68.62	65.69
16	11.56	11.06	36	26.01	24.89	56	40.45	38.72	76	54.90	52.55	96	69.35	66.39
17	12.28	11.76	37	26.73	25.59	57	41.17	39.42	77	55.62	53.25	97	70.07	67.08
18	13.00	12.45	38	27.45	26.28	58	41.90	40.11	78	56.34	53.94	98	70.79	67.77
19	13.72	13.14	39	28.17	26.97	59	42.62	40.80	79	57.07	54.63	99	71.51	68.46
20	14.45	13.83	40	28.89	27.66	60	43.34	41.49	80	57.79	55.32	100	72.24	69.15

46¼ DEGREES

Dist.	Lat.	Dep.												
1	0.72	0.69	21	15.11	14.59	41	29.49	28.48	61	43.88	42.37	81	58.27	56.27
2	1.44	1.39	22	15.83	15.28	42	30.21	29.18	62	44.60	43.07	82	58.99	56.96
3	2.16	2.08	23	16.54	15.98	43	30.93	29.87	63	45.32	43.76	83	59.71	57.56
4	2.88	2.78	24	17.26	16.67	44	31.65	30.56	64	46.04	44.46	84	60.42	58.35
5	3.60	3.47	25	17.98	17.37	45	32.37	31.26	65	46.76	45.15	85	61.14	59.05
6	4.32	4.17	26	18.70	18.06	46	33.09	31.95	66	47.48	45.85	86	61.86	59.74
7	5.04	4.86	27	19.42	18.76	47	33.81	32.65	67	48.20	46.54	87	62.58	60.41
8	5.75	5.56	28	20.14	19.45	48	34.53	33.34	68	48.92	47.24	88	63.30	61.13
9	6.47	6.25	29	20.86	20.15	49	35.25	34.04	69	49.63	47.93	89	64.02	61.82
10	7.19	6.95	30	21.58	20.84	50	35.97	34.73	70	50.35	48.63	90	64.74	62.52
11	7.91	7.64	31	22.30	21.53	51	36.69	35.43	71	51.07	49.32	91	65.46	63.21
12	8.63	8.34	32	23.02	22.23	52	37.41	36.12	72	51.79	50.02	92	66.18	63.91
13	9.35	9.03	33	23.74	22.92	53	38.12	36.82	73	52.51	50.71	93	66.90	64.60
14	10.07	9.73	34	24.46	23.62	54	38.84	37.51	74	53.23	51.40	94	67.62	65.30
15	10.79	10.42	35	25.18	24.31	55	39.56	38.21	75	53.95	52.10	95	68.34	65.99
16	11.51	11.11	36	25.90	25.01	56	40.28	38.90	76	54.67	52.79	96	69.06	66.69
17	12.23	11.81	37	26.62	25.70	57	41.00	39.60	77	55.39	53.49	97	69.78	67.38
18	12.95	12.50	38	27.33	26.40	58	41.72	40.29	78	56.41	54.18	98	70.50	68.08
19	13.67	13.20	39	28.05	27.09	59	42.44	40.98	79	56.83	54.88	99	71.21	68.77
20	14.39	13.89	40	28.77	27.79	60	43.16	41.68	80	57.55	55.57	100	71.93	69.47

46 DEGREES

TRAVERSE TABLE

44½ DEGREES

Dist.	Lat.	Dep.												
Dist.	Dep.	Lat.												
1	0.72	0.70	21	15.04	14.65	41	29.37	28.61	61	43.69	42.57	81	58.02	56.52
2	1.43	1.40	22	15.76	15.35	42	30.08	29.31	62	44.41	43.26	82	58.74	57.22
3	2.15	2.09	23	16.47	16.05	43	30.80	30.00	63	45.13	43.96	83	59.45	57.92
4	2.87	2.79	24	17.19	16.75	44	31.52	30.70	64	45.84	44.66	84	60.17	58.61
5	3.58	3.49	25	17.91	17.44	45	32.23	31.40	65	46.56	45.36	85	60.89	59.31
6	4.30	4.19	26	18.62	18.14	46	32.95	32.10	66	47.28	46.05	86	61.60	60.01
7	5.01	4.88	27	19.34	18.84	47	33.67	32.80	67	47.99	46.75	87	62.32	60.71
8	5.73	5.58	28	20.06	19.54	48	34.38	33.49	68	48.71	47.45	88	63.03	61.41
9	6.45	6.28	29	20.77	20.24	49	35.10	34.19	69	49.42	48.15	89	63.75	62.10
10	7.16	6.98	30	21.49	20.93	50	35.82	34.89	70	50.14	48.85	90	64.47	62.80
11	7.88	7.68	31	22.21	21.63	51	36.53	35.59	71	50.86	49.54	91	65.18	63.59
12	8.60	8.37	32	22.92	22.33	52	37.25	36.29	72	51.57	50.24	92	65.90	64.20
13	9.31	9.07	33	23.64	23.03	53	37.96	36.98	73	52.29	50.94	93	66.62	64.89
14	10.03	9.77	34	24.35	23.72	54	38.68	37.68	74	53.01	51.64	94	67.33	65.59
15	10.74	10.47	35	25.07	24.42	55	39.40	38.38	75	53.72	52.33	95	68.05	66.29
16	11.46	11.16	36	25.79	25.12	56	40.11	39.08	76	54.44	53.03	96	68.76	66.99
17	12.18	11.86	37	26.50	25.82	57	40.83	39.77	77	55.16	53.73	97	69.48	67.69
18	12.89	12.56	38	27.22	26.52	58	41.55	40.47	78	55.87	54.43	98	70.20	68.38
19	13.61	13.26	39	27.94	27.21	59	42.26	41.17	79	56.59	55.13	99	70.91	69.08
20	14.33	13.96	40	28.65	27.91	60	42.98	41.87	80	57.30	55.82	100	71.63	69.78

45¾ DEGREES

Dist.	Lat.	Dep.												
Dist.	Dep.	Lat.												
1	0.71	0.70	21	14.98	14.72	41	29.24	28.74	61	43.51	42.76	81	57.77	56.77
2	1.43	1.40	22	15.69	15.42	42	29.96	29.44	62	44.22	43.46	82	58.49	57.47
3	2.14	2.10	23	16.40	16.12	43	30.67	30.14	63	44.93	44.16	83	59.20	58.18
4	2.85	2.80	24	17.12	16.82	44	31.38	30.84	64	45.65	44.86	84	59.91	58.88
5	3.57	3.50	25	17.83	17.52	45	32.10	31.54	65	46.36	45.56	85	60.63	59.58
6	4.28	4.21	26	18.54	18.22	46	32.81	32.24	66	47.07	46.26	86	61.34	60.28
7	4.99	4.91	27	19.26	18.92	47	33.52	32.94	67	47.79	46.96	87	62.05	60.98
8	5.71	5.61	28	19.97	19.63	48	34.24	33.64	68	48.50	47.66	88	62.77	61.68
9	6.42	6.31	29	20.68	20.33	49	34.95	34.34	69	49.21	48.36	89	63.48	62.38
10	7.13	7.01	30	21.40	21.03	50	35.66	35.05	70	49.93	49.06	90	64.19	63.08
11	7.85	7.71	31	22.11	21.73	51	36.38	35.75	71	50.64	49.76	91	64.91	63.78
12	8.56	8.41	32	22.82	22.43	52	37.09	36.45	72	51.35	50.47	92	65.62	64.48
13	9.27	9.11	33	23.54	23.13	53	37.80	37.15	73	52.07	51.17	93	66.33	65.18
14	9.99	9.81	34	24.25	23.83	54	38.52	37.85	74	52.78	51.87	94	67.05	65.89
15	10.70	10.51	35	24.96	24.53	55	39.23	38.55	75	53.49	52.57	95	67.76	66.59
16	11.41	11.21	36	25.68	25.23	56	39.94	39.25	76	54.21	53.27	96	68.47	67.29
17	12.13	11.92	37	26.39	25.93	57	40.66	39.95	77	54.92	53.97	97	69.19	67.99
18	12.84	12.62	38	27.10	26.63	58	41.37	40.65	78	55.63	54.67	98	69.90	68.69
19	13.55	13.32	39	27.82	27.34	59	42.08	41.35	79	56.35	55.37	99	70.61	69.39
20	14.26	14.02	40	28.53	28.04	60	42.79	42.05	80	57.06	56.07	100	71.33	70.09

45½ DEGREES

44 $\frac{3}{4}$ DEGREES

Dist.	Lat.	Dep.												
1	0.71	0.71	21	14.91	14.78	41	29.12	28.86	61	43.32	42.94	81	57.52	57.03
2	1.42	1.41	22	15.62	15.49	42	29.83	28.57	62	44.03	43.65	82	58.24	57.73
3	2.13	2.11	23	16.33	16.19	43	30.54	30.27	63	44.74	44.35	83	58.95	58.43
4	2.84	2.82	24	17.04	16.90	44	31.25	30.98	64	45.45	45.06	84	59.66	59.14
5	3.55	3.52	25	17.75	17.60	45	31.96	31.68	65	46.16	45.76	85	60.37	59.84
6	4.26	4.22	26	18.46	18.30	46	32.67	32.38	66	46.87	46.46	86	61.08	60.55
7	4.97	4.93	27	19.17	19.01	47	33.38	33.09	67	47.58	47.17	87	61.79	61.25
8	5.68	5.63	28	19.89	19.71	48	34.09	33.79	68	48.29	47.87	88	62.50	61.95
9	6.39	6.34	29	20.60	20.42	49	34.80	34.50	69	49.00	48.58	89	63.21	62.66
10	7.10	7.04	30	21.31	21.12	50	35.51	35.20	70	49.71	49.28	90	63.92	63.36
11	7.81	7.74	31	22.02	21.82	51	36.22	35.90	71	50.42	49.98	91	64.63	64.07
12	8.52	8.45	32	22.73	22.53	52	36.93	36.61	72	51.13	50.69	92	65.34	64.77
13	9.23	9.15	33	23.44	23.23	53	37.64	37.31	73	51.84	51.39	93	66.05	65.47
14	9.94	9.86	34	24.15	23.94	54	38.35	38.02	74	52.55	52.10	94	66.76	66.18
15	10.65	10.56	35	24.86	24.64	55	39.06	38.72	75	53.26	52.80	95	67.47	66.88
16	11.36	11.26	36	25.57	25.34	56	39.77	39.42	76	53.97	53.51	96	68.18	67.59
17	12.07	11.97	37	26.28	26.05	57	40.48	40.13	77	54.68	54.21	97	68.89	68.20
18	12.78	12.67	38	26.99	26.75	58	41.19	40.83	78	55.39	54.91	98	69.60	68.93
19	13.49	13.38	39	27.70	27.46	59	41.90	41.54	79	56.10	55.62	99	70.31	69.70
20	14.20	14.08	40	28.41	28.16	60	42.61	42.24	80	56.18	56.32	100	71.02	70.40
Dist.	Dep.	Lat.												

45 $\frac{1}{4}$ DEGREES

45 DEGREES

Dist.	Lat.	Dep.												
1	0.71	0.71	21	14.85	14.85	41	28.99	28.99	61	43.13	43.13	81	57.28	57.28
2	1.41	1.41	22	15.56	15.56	42	29.70	29.70	62	43.84	43.84	82	57.98	57.98
3	2.12	2.12	23	16.26	16.26	43	30.41	30.41	63	44.55	44.55	83	58.69	58.69
4	2.83	2.83	24	16.97	16.97	44	31.11	31.11	64	45.25	45.25	84	59.40	59.40
5	3.54	3.54	25	17.68	17.68	45	31.82	31.82	65	45.96	45.96	85	60.10	60.10
6	4.24	4.24	26	18.38	18.38	46	32.53	32.53	66	46.67	46.67	86	60.81	60.81
7	4.95	4.95	27	19.09	19.09	47	33.23	33.23	67	47.38	47.38	87	61.52	61.52
8	5.66	5.66	28	19.80	19.80	48	33.94	33.94	68	48.08	48.08	88	62.23	62.23
9	6.36	6.36	29	20.51	20.51	49	34.65	34.65	69	48.79	48.79	89	62.93	62.93
10	7.07	7.07	30	21.21	21.21	50	35.36	35.36	70	49.50	49.50	90	63.64	63.64
11	7.78	7.78	31	21.92	21.92	51	36.06	36.06	71	50.20	50.20	91	64.35	64.35
12	8.49	8.49	32	22.63	22.63	52	36.77	36.77	72	50.91	50.91	92	65.05	65.05
13	9.19	9.19	33	23.33	23.33	53	37.48	37.48	73	51.62	51.62	93	65.76	65.76
14	9.90	9.90	34	24.04	24.04	54	38.18	38.18	74	52.33	52.33	94	66.47	66.47
15	10.61	10.61	35	24.75	24.75	55	38.89	38.89	75	53.03	53.03	95	67.18	67.18
16	11.31	11.31	36	25.46	25.46	56	39.60	39.60	76	53.74	53.74	96	67.88	67.88
17	12.02	12.02	37	26.16	26.16	57	40.31	40.31	77	54.45	54.45	97	68.59	68.59
18	12.73	12.73	38	26.87	26.87	58	41.01	41.01	78	55.15	55.15	98	69.30	69.30
19	13.43	13.43	39	27.58	27.58	59	41.72	41.72	79	55.86	55.86	99	70.00	70.00
20	14.14	14.14	40	28.28	28.28	60	42.43	42.43	80	56.57	56.57	100	70.71	70.71
Dist.	Dep.	Lat.												

45 DEGREES

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